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HARNESSING SMALL BUSINESS INNOVATION: NAVIGATING THE EVALUATION PROCESS FOR GULF COAST OIL CLEANUP PROPOSALS

HEARING

BEFORE THE

COMMITTEE ON SMALL BUSINESS AND ENTREPRENEURSHIP UNITED STATES SENATE

ONE HUNDRED ELEVENTH CONGRESS

SECOND SESSION

JUNE 17, 2010

Printed for the Committee on Small Business and Entrepreneurship

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HARNESSING SMALL BUSINESS INNOVATION: NAVIGATING THE EVALUATION PROCESS FOR GULF COAST OIL CLEANUP PROPOSALS

THURSDAY, JUNE 17, 2010

UNITED STATES SENATE,
COMMITTEE ON SMALL BUSINESS
AND ENTREPRENEURSHIP,
Washington, DC.

The committee met, pursuant to notice, at 10:06 a.m., in Room SD–G50, Dirksen Senate Office Building, Hon. Mary L. Landrieu (chair of the committee) presiding.

Present: Senators Landrieu, Levin, Pryor, Cardin, Shaheen, Hagan, Snowe, and Vitter.

OPENING STATEMENT OF THE HON. MARY L. LANDRIEU, CHAIR, AND A U.S. SENATOR FROM LOUISIANA

Chair LANDRIEU. I would like to call the hearing to order this morning, and I want to thank the members who are here and those that have indicated that they will be coming. This is of great interest to our Committee.

I want to begin by saying that the hearing is entitled "Harnessing Small Business Innovation: Navigating the Evaluation Process for the Gulf Coast Oil Cleanup Proposals." As the title indicates, we are here today to examine the process for evaluating cleanup proposals from the devastating national disaster which began on April 20th, which continues, unfortunately, until this day, and which will go on, even more unfortunately, for many months, if not years ahead in the Gulf of Mexico.

There are a number of very important issues the Deepwater Horizon disaster has triggered at this hearing. This is the second hearing this Committee has conducted on this topic, and we will be hosting and sponsoring more in the days, weeks and months ahead.

On May 27th, this Committee held a hearing to investigate the claims process. How is that working or not working for small businesses directly and indirectly affected by this disaster? To those small businesses, I will say, as I have been saying for weeks here in Washington and at home along the Gulf, if your business made $50,000 last year, or you or your business, and you did not make any money this year, BP is going to write you a check for $50,000. If you made $1 million last year in your business and you cannot make money this year or next year, BP is going to write you a $2

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million check. This Committee is going to do its part to make sure that that claims process works.

Now we are turning our attention to another important issue affecting small business. As I have said before, in Hurricanes Katrina and Rita, our business owners were up to their chins in water. Now because of this disaster, these same business owners find themselves up to their knees in oil. We want to find out how small businesses right there on the Gulf Coast and around the nation, with technology and innovation that can help clean up this oil, keep it off of our beaches and out of our marshes. How can we get these ideas, these new technologies and these new innovations deployed to the Gulf of Mexico?

Today's hearing will cover the Federal evaluation process for technologies which can assist in cleaning up the oil. It is my hope that together we can find ways to improve the overall process and better understand how many businesses that have reached out to help the Gulf Coast region can play a role in the cleanup as we move forward.

To accomplish that end, we have two panels before us. I will introduce them in a minute. Our first panel includes Federal officials who are playing a key role in reviewing and awarding contracts to businesses with cleanup proposals: Rear Admiral Ronald Rábago with the United States Coast Guard and Dr. Paul Anastas with the Environmental Protection Agency. We hope you will be able to let small businesses here in the audience and listening to these proceedings through radio, television and the Internet understand a little bit better how they might make their proposals known to you. Since we know there is always room for improvement, we hope you will be able to tell us what has been working, what is not working, and what we can do together to streamline this process.

For our second panel, I would like to welcome some of our own small business owners and university officials that are on the front line. Some of them have had some limited success in contacting BP and the Coast Guard. Still others are trying to navigate what they think is a too confusing process, and we want to hear from them.

As Chairman of this Committee, with the help of my Ranking Member—and able help, I might say, we have tried to make this a place where the voices of small business can be heard across sometimes the roar of partisanship and sometimes the roar of big business. We want small business to have a voice here in Washington, and that is what this hearing is about.

Our goal is not to spotlight one technology over another or to pretend that there is a silver bullet that will immediately reverse what is happening. The most recent data from the Flow Rate Technical Group estimates as much as 60,000 barrels of oil—that is 2.5 million gallons—is gushing from this well every day. Our goal is to improve the effectiveness and efficiency in contracting with the Government to get this oil cleaned up and out of the water, the ocean, and the marshes as soon as possible. We are not here to highlight any single business but, rather, to learn from the businesses that have been able to succeed in their efforts or not succeed to see what we can do to make it better.

From the restaurants, distributors, and suppliers in every corner of the world that rely on the seafood that comes from the Gulf, this

is very important. As such, every idea, every business, large or small, must have the opportunity to provide input on how to clean up the oil, and I should say credible businesses and credible technologies. We are trying to preserve the way of life for more than 27,000 direct jobs in the Louisiana seafood industry alone that depend on industries along the Gulf Coast.

This is not the first time that you are hearing from the Small Business Committee. As I said, we have had hearings in the past, and we intend to do so in the future.

In the spirit of transparency, as I conclude this brief opening statement, I have asked my staff to put together—and I hope they will put it up for review—a two-page document that we suggest could be helpful to small businesses who want to submit a product or an idea for the Unified Command or BP. Instructions to fill out the form as well as the website to submit this information have been put into a single place. These forms will be available following the hearing today on our website.

[The document follows:]

U.S. Senate Committee on Small Business and Entrepreneurship

Containing the Gulf of Mexico Oil Spill: An Overview of the Proposal Process for Small Businesses

I. BP Process

BP has received more than 80,000 ideas on how to stop the flow of oil or contain the oil spill since the Gulf of Mexico incident began.

- Company proposals should be submitted in one of two categories: (1) ideas and (2) developed products and services.
- To submit alternative response technology, services or products, **call (281) 366-5511**. Each caller to the Houston suggestion line will have their details entered into the Horizon Call Center database. The database will then send the caller a simple form, termed either the **Alternative Response Technologies** form, or the **Products and Services** Form, for them to set out the details of their idea.
- The forms are available online at: **www.horizonedocs.com.** (A sample form can be found below. The forms must be filled out and submitted online).
- After the caller completes and submits the form, it is sent for review by a team of 30 technical and operational personnel who will review its technical feasibility and application. Given the quantity of the proposals and the detail in which the team investigates each idea, the technical review can take some time.

(1) If you have an **idea** to contain the spill or clean it up, please submit this form on-line:

Alternative Technology Response Form

This form is to be used ONLY if you wish to submit an Idea or Alternate Response Technology for containing the Source or Spill in support of the Deepwater Horizon Incident. An attachment containing technical details can be included with the form. If more than one attachment is required, they must be compressed into a single zip file.

If you have Products, Services and/or Equipment you wish to make available for either containing the Source or Spill, please use the Products / Services / Equipment Information Sheet on the previous page. An attachment containing technical details can be included with the form. If more than one attachment is required, they must be compressed into a single zip file.

Go Back

Contact Information (* indicates required information)

First Name*: Last Name*: Date:

Company: State*: Select a State or Country (If Not in U.S.): ZIP:

Primary Phone*: Other Phone: Email*:

This is a solution for the: Spill Source

Brief Description of Technology (200 words or less)

Materials Required (50 words or less)

Equipment Required (50 words or less)

Expertise Required – including description and numbers (100 words or less)

Attachments - Size Limit: 2MB (NOTE: if you have more than One (1) attachment, you MUST ZIP before uploading File.

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(2) If you have an already **developed product or service** to contain the spill or clean it up, please submit this form on-line:

Product / Service / Equipment Information Sheet

This form is to be used ONLY if you wish to submit Products, Services and/or Equipment in support of the Deepwater Horizon Incident. The Products, Services and/or Equipment form implies they are commercially available and you have these immediately available, including experienced implementation resources.

If you have an Idea OR Alternate Response Technology for either containing the Source or Spill, please use the Alternate Reponses Technology form on the previous page.

Go Back

Contact Information (* indicates required information)

First Name*: Last Name*: Date:

Company: State*: Select a State or Country (If Not in U.S.): ZIP:

Primary Phone*: Other Phone: Email*:

Brief Description of Product (200 words or less):

Brief Description of Service (200 words or less):

Brief Description of Equipment (200 words or less):

Attachments: Size Limit: 2MB (NOTE: if you have more than One (1) attachment, you MUST ZIP before uploading File:

II. Federal Process

In addition to submitting proposals to stop the flow of oil or contain the oil spill through BP, the federal government also has an avenue for the submission of such proposals.

- **The Interagency Alternative Technology Assessment Program** workgroup (IATAP), established by the National Incident Commander for the BP Deepwater Horizon oil spill, has established a process for collecting and reviewing oil spill response solutions from scientists and vendors.

To submit a suggestion, visit **www.deepwaterhorizonresponse.com** click on the suggestions tab and follow these steps:

1. Go to the **FedBizzOps Deepwater Horizon Response** page.
2. Open the most current Amendment (Amendment #1 as of June 4, 2010) that contains BAA synopsis.
3. Read the BAA synopsis.
4. If submitting a BAA white paper, click on the link on page 3 of the BAA synopsis. The link follows the words: "Offerors shall respond to this BAA by electronically submitting a White Paper at"
5. Fill out the online form and attach BAA white paper as per synopsis.
6. Click Submit.

What happens to these suggestions?

The IATAP and the RDC will screen and triage submissions based on technical feasibility, efficacy and deployability.

Additional Information

Individuals submitting suggestions shall respond to this BAA by electronically submitting a White Paper at **www.homeport.uscg.mil/RDC-BAA-DHR**. All contractual and technical questions regarding this BAA must sent in writing to **RDC-BAA-DHR@uscg.mil**. FAQs will be periodically posted at **http://www.homeport.uscg.mil/RDC-BAA-DHR-FAQ**.

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Lastly, I would like everybody to check the Unified Command website regularly for the most up-to-date information. I thank the members of this Committee who have contributed to this hearing for their ideas about this document that is being circulated as I speak, and we hope this hearing will give us some ideas about how to move forward.

I am going to turn it over to Senator Snowe for an opening statement. Senator Snowe.

OPENING STATEMENT OF HON. OLYMPIA J. SNOWE, RANKING MEMBER, AND A U.S. SENATOR FROM MAINE

Senator SNOWE. Thank you, Chair Landrieu, for holding what is a very critical hearing today on what is undoubtedly the worst environmental disaster in the history of this nation. Words cannot express how devastating this calamity is to the Gulf Coast, especially the families of the 11 workers who lost their lives when the rig exploded on April 20th.

As Ranking Member of both this Committee and the Commerce Subcommittee on Oceans, Atmosphere, Fisheries, and Coast Guard, I believe that indisputably it is the size of the spill that must dictate our response to this disaster and how we mitigate its horrific effects.

With 2.5 million gallons of oil hemorrhaging into the Gulf every day, equivalent to an Exxon Valdez size spill every 4 to 5 days and oil now reaching the coastlines of Alabama and Florida, it is clear that the Federal Government is failing to deploy and bring to bear the equipment and technology this disaster demands.

Indeed, in a letter to the President 2 weeks ago, I urged that he seize the reins of crisis response from BP and establish a single point of Federal accountability for approving new and innovative technologies and methodologies to protect the oceans, bays, beaches, and wetlands that sustain the Gulf Coast economy and nurture an entire way of life now in jeopardy of being lost, because the Federal Government is the only entity, in stark contrast to BP, whose sole responsibility is to the public interest of the American people. Yet, regrettably, we have witnessed little evidence that the tempo of the response has been meaningfully accelerated, and serious questions remain about the clarity and the effectiveness of the chain of command. Indeed, as the small businesses here today will testify, they often continue to find themselves ensnared in the bureaucratic quagmire as a result of a process with no unified approach for evaluating and improving their entrepreneurial solutions to this unparalleled catastrophe.

Rather inexplicably, a dual-track system remains in place with BP vetting some ideas while the Federal Government examines others, and that is a recipe for inefficiency and inconsistency with the results that some new and unverified ideas are expedited for implementation while other proven technologies may be overlooked, delayed, or erroneously dismissed.

So on our first panel, I expect Coast Guard Rear Admiral Ronald Rábago and Dr. Paul Anastas of the Environmental Protection Agency to provide details of the Interagency Alternative Technology Assessment Program, and in particular why it was not fully operational until June 4th. Six weeks after the initial explosion oc-

curred, why is it that of the 1,600 to 1,700 concepts submitted, I understand not one idea has yet to be accepted and why the Federal program continues to operate parallel with another system BP has already established to review new technologies which itself has resulted in the implementation of just 10 to 15 new devices or response strategies out of the more than 90,000 ideas received?

Which leads us to our second panel, where we will have testimony from some of the creators of these ideas, including Dan Parker of C.I.Agent Solutions, Heather Baird of MicroSorb Environmental Products, and Kevin Costner of Ocean Therapy Solutions. All three will discuss how businesses with the alternative technologies are confronted with needless roadblocks resulting from a dysfunctional process. We will also hear from two academics, Professor Eric Smith of Tulane University and Dr. Carys Mitchelmore of the University of Maryland, who have extensive experience in oil spills and specific technologies used to combat them. We appreciate all of you taking the time to appear before our Committee today.

We have an obligation to determine why proven technologies, like those produced by Ms. Baird's company, which BP itself has used in the past, have been languishing in warehouses for nearly 2 months since the spill began, despite their potential contributions to the response effort. Meanwhile, the Environmental Protection Agency and the Coast Guard took just 10 days to approve the application of Corexit, despite the fact that it is a dispersant chemical of dubious toxicity, which has never been used before in such quantities, and it has never been employed beneath the ocean surface, never mind at a depth of nearly a mile. Yet despite the reality that the environmental ramifications of this strategy had never been studied, BP was permitted to apply in some cases more than 15,000 gallons per day. This double standard of approval is made all the more disconcerting by the revelation in the Houston Chronicle that this dispersant is produced by a company with corporate ties to BP. So exactly how is it that BP successfully convinced EPA to approve this toxic solution, but small businesses with non-toxic containment and remediation solutions are subjected to months of meticulous review?

So today it is crucial that we ascertain just exactly why we have two parallel approval processes, one for BP and one for the Federal Government, and what possible advantage could that provide. Moreover, precisely what testing did the EPA and the Coast Guard conduct prior to allowing the subsea application of dispersants in the first place? And how is it that American small businesses are now being subjected to a process that appears to lack any semblance of standardization or consistency that will allow us to effectively and efficiently protect our invaluable natural resources?

It is, frankly, inconceivable that 20 years have elapsed since the Exxon Valdez disaster with no detectable enhancement of our ability to attack a spill of any magnitude. It would now be unconscionable to continue to shackle the kind of innovation that could allow us to rise to the Herculean challenge before us.

It is, therefore, paramount that the Federal Government finally begin to move with due urgency that has been conspicuously lacking because ultimately we have an obligation to leave no stone unturned in instituting a thoroughly timely and rational process to

fast-track the review of all technologies and methodologies that have the potential to contain and to stem the flow of oil and to mitigate the damage already inflicted.

Thank you, Madam Chair.

Chair LANDRIEU. Thank you. I am going to ask Senator Vitter and Senator Shaheen for a very brief opening statement.

OPENING STATEMENT OF HON. DAVID VITTER, A U.S. SENATOR FROM LOUISIANA

Senator VITTER. Thank you, Madam Chair, for holding this hearing. This is a very important topic. From the very beginning, I, like you and others, underscored the need to reach out to and involve small business, and there is a need still to do that in at least two different ways: first of all, to harness technological solutions and innovative ideas out there that are not being implemented now; and, secondly, to involve local Louisiana small business in the cleanup effort as a way of mitigating the economic hit they are clearly taking. I talked to BP about this early on, and I talked to the Federal agencies and the Coast Guard about this early on.

Unfortunately, I think that has largely fallen on deaf ears. I can tell you from personal experience, when we direct folks to the supposedly high-level contacts we were given or even when we used those supposedly high-level contacts, including me personally sending something from my BlackBerry—which I have not done often but on a few select occasions—it seems to go into a black hole. We get little more usually than an automated response and no significant follow-up. So that is really disappointing.

In closing, let me say, Madam Chair, I am also concerned, as I know you are, by the enormous hit small business is facing by the drilling moratorium. That, if it holds, will cost us more jobs than the oil spill itself. Even in shallow water, where the Administration is saying there is no moratorium, I can tell you from talking to small business affected, there is a de facto moratorium right now because the Administration is not prepared to take new permit applications under their new rules yet. Until they clarify that and until they do, there is a de facto moratorium in shallow water which is costing additional jobs.

Thank you very much, Madam Chair. Unfortunately, I cannot stay, but I will follow up with these witnesses and these issues.

Chair LANDRIEU. Thank you, Senator Vitter.

Senator Shaheen.

OPENING STATEMENT OF HON. JEANNE SHAHEEN, A U.S. SENATOR FROM NEW HAMPSHIRE

Senator SHAHEEN. Thank you, Madam Chairman, for holding this hearing this morning. I look forward to hearing from our panelists about how we can make sure that we do everything possible to bring the best technologies and innovations that are happening across this country to bear on this horrible disaster. I have heard from small businesses and scientists in New Hampshire who have ideas about what we can do to clean up the spill. So we want to make sure that we hear from you all about how we can be more effective, and I will submit the remainder of my statement for the record. Thank you.

[The prepared statement of Senator Shaheen follows:]

Senate Committee on Small Business and Entrepreneurship
Hearing on Utilizing Small Business Research and Technology
for Gulf Coast Oil Cleanup
June 17, 2010
Opening Statement of Senator Jeanne Shaheen

Madame Chair, let me begin by saying that my heart goes out to the people in your state and the entire Gulf region who are suffering as a result of this spill. I know that you and the other Gulf Coast Senators are working tirelessly to ensure that those affected are getting help.

Almost 60 days have passed. Oil continues to gush into the Gulf, wash onto our shores and destroy the economy and the environment in the Gulf region. We are all committed to holding BP entirely responsible, but it is clear that BP does not have the technological tools to solve this challenge alone.

That's why I am pleased to be here today to discuss how we can harness the innovation of our small businesses to stop the flow of oil in the Gulf and clean up our oceans and coastline. I have heard from small businesses and independent scientists in my state who are ready to put their technologies to work cleaning up the oil spill, yet bureaucratic red tape stands in the way. We must ensure we put the best ideas and most viable technologies to use cleaning up this devastating spill.

Thank you, Madame Chair, for scheduling this important hearing.

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Chair LANDRIEU. Thank you, Senator.

Let me begin with our first panel. We have Rear Admiral Ronald Rábago, who currently serves as Assistant Commandant for Acquisition and Chief Acquisition Officer for the U.S. Coast Guard. Before he served in that position, he was a graduate of the academy. He has also held, obviously, a variety of different positions with the Coast Guard, and we are interested to hear your testimony this morning.

Dr. Paul Anastas, Assistant Administrator for EPA, prior to your nomination, you were the Director of the Center for Green Chemistry and Green Engineering and the Teresa and John Heinz Professor in the Practice of Chemistry for Yale University. You have an extraordinary background in that area, and we are happy to have you today.

Let us begin with you, Admiral.

STATEMENT OF REAR ADMIRAL RONALD RÁBAGO, ASSISTANT COMMANDANT FOR ACQUISITION & CHIEF ACQUISITION OFFICER, ACQUISITION DIRECTORATE, U.S. COAST GUARD

Admiral RÁBAGO. Good morning, Madam Chair and distinguished members of the Committee. My name is Rear Admiral Ron Rábago, the Coast Guard's Assistant Commandant for Acquisition, which includes our research and development program. I appreciate the opportunity to appear before you today to discuss the process by which the public, including small businesses, can propose their ideas for oil spill cleanup on the Gulf Coast.

The Oil Pollution Act of 1990, or OPA 90, gives the Coast Guard broad responsibilities and authorities for oil spill prevention and response on U.S. navigable waters. This includes conducting research, in coordination with other agencies, on innovative oil spill-related technology. Part of my duties are to oversee the Coast Guard's sole Research and Development Center in New London, Connecticut, which through OPA 90 receives annual funding for oil spill research. In past years, our research in partnership with other agencies and entities has focused in four areas: prevention, spill response planning, spill response planning, spill detection, and oil containment and recovery.

This complex oil spill in the Gulf demands a whole of Government response. We are currently receiving thousands of ideas and proposals from the public, many of them being submitted by small businesses who want to help. In order to best evaluate and respond to these innovative offers of technology assistance, the Coast Guard, at the request of the Federal on-scene coordinator and the National Incident Commander, established the Interagency Alternative Technology Assessment Program, or IATAP, on May 18th.

Because of the scope and magnitude of the response required, we needed to speed up the pace at which potentially good ideas were being evaluated. We also wanted to make sure that all ideas were looked at in a fair and consistent way. Almost immediately, the IATAP began to receive proposals of all sorts, and we began to standardize and simplify the process.

On the 4th of June, IATAP issued a Broad Agency Announcement, or BAA, on the Federal Business Opportunities website calling for submission of technical white papers describing proposed

technology solutions. The BAA process provides a structured way to receive submissions and seeks proposals in five categories: oil sensing; wellhead control and submerged response; traditional oil spill response technologies; alternative oil spill response technologies; and oil spill damage assessment and restoration.

The BAA process is open to all sources, and the Coast Guard welcomes and recognizes the value of novel, highly innovative solutions from small businesses, individuals, and other non-traditional sources, such as nonprofits and academic institutions. Our R&D center is also processing submissions received via phone and e-mail prior to the stand-up of the BAA process.

With this structured process, once an idea is received, the offeror is sent an immediate receipt of acknowledgment and a tracking number. Our R&D center performs initial triage to determine what category the idea falls into. These categories are: not applicable for this particular event; meriting further evaluation to determine its viability; or showing immediate and exceptional promise.

If an idea has obvious and potentially immediate benefit, it is forwarded, along with the evaluation team's recommendation, to the Federal on-scene coordinator who, based on operational need, will determine whether to procure and use the technology. Ideas that appear to have benefit but cannot be verified through an initial review process must undergo more detailed evaluation, which can be led by any one of our Government partners under the IATAP as appropriate for the proposed technology. Our partners include the EPA, NOAA, Army Corps of Engineers, Department of Agriculture, Fish and Wildlife Service, and the Minerals Management Service. For example, a white paper on new dispersant technology would be best evaluated by experts at EPA.

It is important to note that the BAA is not a competition. Each submission is evaluated on its own scientific and technical merits, potential efficacy, and deployability. The timelines associated with the more detailed second-level evaluation will depend on the complexity of the idea, but the IATAP is working to process all ideas as rapidly as possible.

As of late yesterday, we had received nearly 1,300 submissions from the BAA process. Additionally, we received 620 submissions prior to the issuance of the BAA. Already, 628 submissions from before and after the BAA have gone through screening and are under evaluation; 114 are being screened as I speak. The remainder has just entered the screening process. One proposal for skimmer technology has already been forwarded to the Federal on-scene coordinator for potential use, and five additional potential solutions will be forwarded shortly.

This oil spill requires the largest environmental disaster response in our history, and we need good ideas from all sources to fight the battle. The Coast Guard understands the value of the Nation's small businesses. Notably, in fiscal year 2009, we awarded 46 percent, or $1.1 billion, of our total contracting dollars to small businesses. We know that small businesses are in many ways the engines of innovation. The BAA methodology we are using is a well defined, consistent, fair, and Government-managed process to solicit, screen, and evaluate all spill technologies. All proposals are

thoroughly but expeditiously evaluated to ensure that the technology can contribute to the effort.

Thank you for the opportunity to testify today. I look forward to answering any questions and ask that my full written statement be submitted for the record.

Chair LANDRIEU. Without objection.

[The prepared statement of Admiral Rábago follows:]

U. S. Department of Homeland Security

United States Coast Guard

Commandant
United States Coast Guard

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Staff Symbol: CG-0921
Phone: (202) 372-3500
FAX: (202) 372-2311

TESTIMONY OF
REAR ADMIRAL RONALD RÁBAGO
ASSISTANT COMMANDANT FOR ACQUISITION

"HARNESSING SMALL BUSINESS INNOVATION: NAVIGATING THE EVALUATION PROCESS FOR GULF COAST OIL CLEANUP PROPOSALS"

BEFORE THE SENATE COMMITTEE ON
SMALL BUSINESS AND ENTREPRENEURSHIP

JUNE 17, 2010

Good morning Madam Chair and distinguished Members of the Committee. Thank you for the opportunity to testify before you on the process for submitting Gulf Coast cleanup proposals to the federal government.

The Oil Pollution Act of 1990 (OPA 90) and applicable federal legislation and regulations provide the United States Coast Guard with broad responsibilities and authorities regarding oil spill response oversight on U.S. navigable waters. These responsibilities and authorities include conducting, in coordination with other federal agencies, research on innovative oil spill-related technology. In order to best leverage the numerous offers of innovative technology assistance to the Deepwater Horizon spill response, the Coast Guard, at the request of the Federal On-Scene Coordinator (FOSC) and the National Incident Commander (NIC), established the Interagency Alternative Technology Assessment Program (IATAP).

The IATAP is a documented, systematic, government-managed process to solicit, screen and evaluate alternative or new technologies in support of ongoing Deepwater Horizon spill response activities. This government interagency process provides for fair and consistent evaluation of each and every idea. The system is designed to provide submitters with timely acknowledgement notifications upon receipt of their proposal, as well as determination notifications as their proposal progresses through the evaluation process.

The IATAP workgroup is comprised of subject matter experts from the Coast Guard, the U.S. Environmental Protection Agency (EPA), Minerals Management Service (MMS), National Oceanic and Atmospheric Administration (NOAA), Fish and Wildlife Service, Maritime Administration, U.S. Department of Agriculture, and U.S. Army Corps of Engineers. Other agencies or entities may be added to the workgroup as required depending upon the technology under evaluation. The IATAP objectively evaluates proposals with technical rigor, and provides potentially effective solutions to frontline responders.

On May 21, 2010, the Coast Guard R&D Center initiated an interim system prior to the formal standup of the IATAP to handle ad hoc submissions received via phone and e-mail. To date, 620 ad hoc technology-related response submissions have been received for initial screening and evaluation through this system.

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On June 4, 2010, a more formal IATAP process began with the issuance of a Broad Agency Announcement (BAA) on the Federal Business Opportunities (FedBizOpps) website soliciting requests for oil spill response technology. The BAA calls for the submission of white papers describing proposed technology solutions with applicability in five distinct problem areas:

- Oil sensing improvements to response and detection;
- Oil wellhead control and submerged oil response;
- Traditional oil spill response technologies;
- Alternative oil spill response technologies; and
- Oil spill damage assessment and restoration.

This BAA is open to all sources and is available from the front page of FedBizOpps. Through this process, the Coast Guard recognizes the potential for novel, highly innovative solutions from small businesses, individuals and non-traditional sources. Submissions may include those from single or team entities such as academia, private sector organizations, government laboratories and federally funded research and development centers. The government also encourages non-profit organizations, educational/academic institutions, small businesses, small disadvantaged businesses, historically black colleges and universities/minority institutions, women-owned businesses, service-disabled veteran-owned small businesses and historically underutilized business zone enterprises to submit concepts for consideration and/or to join others in a submission.

BAA PROCESS

The BAA white paper submissions are screened based upon overall scientific and technical merit, feasibility, the availability of proposed solution and submitted cost information.

The IATAP workgroup, as managed by the USCG R&D Program, and in consultation with other interagency partners, is screening and sorting submissions based on technical feasibility, efficacy and deployability. The initial screening of the BAA responses will result in a determination that either the concept:

- Has a discernible benefit to the spill response effort;
- Needs more detailed investigation or evaluation and will be forwarded to the appropriate government agency overseeing that portion of the Deepwater Horizon response (EPA, MMS, NOAA, USCG, etc.); or
- Does not have immediate applicability to support this event.

All submissions will be provided with a response and tracking number identifying the initial screening determination. All submissions are managed in the order they are received regardless of origin to ensure fairness in evaluation.

If the initial screening determines that the concept has applicability and potential immediate benefit to the spill response effort, the technical portion of the proposal and the IATAP recommendation is forwarded to the Deepwater Horizon response FOSC for further action under its authority, in consultation with the responsible parties and/or other federal agencies. If the initial screening determines that a more detailed investigation or evaluation is required it will be forwarded to the appropriate government agency overseeing that portion of the Deepwater

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Horizon Response (EPA, MMS, NOAA, or USCG), and that agency is responsible for further action.

To date, we have received 1,273 submissions from the BAA and 70 have completed the initial screening process. We are testing submissions that have cleared the initial screening process for potential deployment.

CONCLUSION

Through the IATAP, the Coast Guard is ensuring all applicable capabilities and resources—government, private, and commercial (to include small business) will be considered for use in developing and improving solutions to secure the environment and facilitate a rapid, robust clean-up effort.

Thank you for the opportunity to testify today. I look forward to your questions.

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Acquisition Directorate

Assistant Commandant for Acquisition

Rear Admiral (RADM) Ronald J. Rábago

Assistant Commandant for Acquisition & Chief Acquisition Officer (CAO)
United States Coast Guard Acquisition Directorate (CG-9)

Rear Admiral Ronald J. Rábago assumed duties as the Assistant Commandant for Acquisition and Chief Acquisition Officer (CAO) on June 15, 2009, following a two year assignment as the Coast Guard Program Executive Officer. As CAO, he directs efforts across all Coast Guard acquisition programs and related procurement management, contracting and research and development activities to execute the Service's current $27 billion acquisition investment portfolio.

In his previous assignment as the Coast Guard's Program Executive Officer (PEO), he oversaw the execution of all Coast Guard acquisition programs and projects, including Deepwater, which provides for the sustainment, modernization, and recapitalization of surface, air, command and control, and logistics assets for the Coast Guard's multiple maritime missions.

RADM Rábago's other assignments include: Director of Personnel Management at Coast Guard Headquarters in Washington, D.C.; Deputy Commander of the Maintenance and Logistics Command Atlantic in Norfolk, Virginia; Industrial Manager and then the Commanding Officer of the Coast Guard Yard in Baltimore, Maryland; Chief of the Fifth District Law Enforcement Branch; Commanding Officer of the Coast Guard Cutter (CGC) TAMPA, in Portsmouth, VA; Executive Officer of the CGC BOUTWELL, in Alameda, California; Type Desk Manager in the Vessel Repair Division of the Maintenance and Logistics Command Atlantic on Governors Island, New York; Executive Officer of the Naval Engineering Support Unit (NESU) at Portsmouth, VA; Port Engineer at the Ship Repair Detachment in Portsmouth, Virginia; Engineer Officer on board the CGC TAMPA; and engineering and deck Marine Inspector at the Marine Safety Office Port Arthur, Texas. His first assignment was aboard the Honolulu-based CGC MELLON as a Student Engineer.

Rear Admiral Rábago is a 1978 graduate of the U.S. Coast Guard Academy, earning a Bachelor of Science Degree in Ocean Engineering. In 1983, he attended the University of Michigan and earned Masters of Science Degrees in Naval Architecture & Marine Engineering and Mechanical Engineering. In 1995, he was named the Coast Guard's "Engineer of the Year" and in 1996, he attended the Naval War College, where he earned a Masters Degree in National Security and Strategic Studies. Rear Admiral Rábago is a licensed Professional Engineer and has earned a Program Manager Level III Certification.

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Chair LANDRIEU. Doctor.

STATEMENT OF PAUL ANASTAS, PH.D., ASSISTANT ADMINISTRATOR, OFFICE OF RESEARCH AND DEVELOPMENT, U.S. ENVIRONMENTAL PROTECTION AGENCY

Dr. ANASTAS. Good morning, Chairman Landrieu, Ranking Member Snowe. Thank you for the opportunity this morning to appear before you. I am Paul Anastas, the Assistant Administrator for the Office of Research and Development at the U.S. Environmental Protection Agency. I appreciate this opportunity to testify about EPA's role in encouraging and engaging small business innovation for the Gulf Coast oil spill response.

As all of you know very well, the ongoing release of oil in the Gulf of Mexico is a continuing tragedy. The loss of human lives and livelihoods and the unprecedented damage to the Gulf region have made this environmental disaster one of the gravest in U.S. history. I am deeply humbled by these events and, like you, am committed to helping and addressing the increasing number of challenges that are left in the wake of these events.

The scope of EPA's response to the BP oil spill is wide. In coordination with Federal, State, and local partners, EPA has mobilized its breadth of resources and expertise in response to the emergency. We have engaged the Emergency Operations Center in EPA headquarters and continue to provide support for a wide range of issues, including air and water monitoring, data interpretation, and much more. But we are here today to focus specifically on efforts to engage the small business community in developing innovative technologies and ideas that may be applied to this disaster.

From the earliest days of this event, EPA recognized that good ideas are not exclusively tied to Federal agencies or large corporations; that the public, including the small business community, is an invaluable resource for creativity and innovations that must be tapped.

Within days of the oil rig collapse, EPA developed and deployed a website portal, epa.gov/bpspill/techsolution, for the submission and rapid review of innovative and environmentally safe technological solutions that could be applied to the spill. Ideas poured in by the hundreds. Today we have received over 2,100 submissions spanning a range of categories from surface water containment to cleanup to air monitoring and detection to landfall cleanup and wildlife protection.

The technological solution site is an important complement to the Administration's oil spill response web page, DeepwaterHorizonsreponse.com, and that website has already received tens of thousands of suggestions across the spectrum of topics.

EPA's review process begins with putting submissions into technology categories. Then EPA technical experts carefully evaluate each submission and transmit them to relevant partners for further evaluation, testing, and potential deployment. Solutions relevant to stanching the flow of oil at the wellhead, for example, are forwarded to the Deepwater Horizon Unified Command and BP. Those relevant to surface cleanup are certainly sent to the Coast Guard, and those regarding dispersants are processed by our Na-

tional Contingency Plan team. Our process is similar to that followed by the other Federal agencies.

In the interest of more efficient use of Federal resources, the U.S. Coast Guard Research and Development Center, as you just heard, has established the IATAP process which was stood up on June 4th. EPA is now working closely collaborating with the IATAP partner agencies to channel ideas through a single streamlined process that my colleague, Admiral Rábago, has elaborated on further.

It is important to recognize that our 2,100 submissions to date represent a broad cross section of the American public. We have reviewed ideas from self-identified entrepreneurs, homemakers, scientists, engineers, small and large businesses, and students—all of whom share one common element: they have been compelled to action on a deeply human level. So in addition to the importance of our submission website as a mechanism for sharing technological solutions, I want to emphasize that it also serves as a venue for people to engage, contribute, and be heard. The passion that is woven in throughout the submissions should not be discounted. Whether it is the potato farmer who suggested harvesting equipment to clean up tar balls on the beach or the automobile mechanic who proposed using a green cleaning solution to wash oil from wildlife, each submitter has conveyed a profound desire to use their skills and to save the national treasure that is the Gulf Coast. Our website and now the IATAP mechanism gives these citizens a voice and an opportunity to respond to the tragedy that has affected us all.

At this time I welcome any questions you may have.

[The prepared statement of Dr. Anastas follows:]

Written Statement of
Paul Anastas, PhD
Assistant Administrator
Office of Research and Development
U.S. Environmental Protection Agency

Hearing on
Impact of the Deepwater Horizon Oil Spill on Small Businesses
Before the
Committee on Small Business and Entrepreneurship
United States Senate
June 17, 2010

Good morning Madam Chair, Ranking Member Snowe, and members of the Committee, I am Dr. Paul Anastas, Assistant Administrator in the Office of Research and Development at the U.S. Environmental Protection Agency (EPA). Thank you for the opportunity to testify today about EPA's role in evaluating small business innovation for Gulf Coast oil cleanup submissions. As all of you know, the ongoing release and spreading of oil in the Gulf of Mexico is a continuing tragedy. EPA, in coordination with our federal, state, and local partners, is committed to protecting Gulf Coast communities from the adverse environmental effects of the Deepwater Horizon oil spill. As part of this commitment, EPA, along with other federal agencies, is reviewing technology proposals from the public, including small businesses, for use in the oil spill cleanup.

Each year, billions of gallons of petroleum and other oils are transported and stored throughout the country, creating a significant potential for oil spills and serious threats to human health and the environment. EPA then either manages the oil spill response or oversees the response efforts of private parties at approximately 300 spills per year. After an oil spill occurs, EPA frequently provides technical assistance which may include air and water monitoring support, mobilizing our On-Scene Coordinators (OSCs) and EPA's Special Teams including the Environmental Response Team and the National Decontamination Team to assist with the response.

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The Special Teams are comprised of highly-skilled environmental experts and utilize modern, sophisticated, and innovative technologies for oil spill response.

EPA shares the responsibility of responding to oil spills with the U.S. Coast Guard, (USCG). EPA leads inland responses and USCG leads coastal responses. Further, we share the responsibility for prevention and preparedness with USCG and several other federal agencies. The National Contingency Plan (NCP) is the federal government's blueprint for responding to both oil spills and hazardous substance releases and provides the federal government with a framework for notification, communication, and delegation of duties with respect to oil spill response. The NCP established the National Response Team (NRT), comprised of fifteen federal agencies, to assist responders by formulating policies and providing information, technical advice, and access to resources and equipment for preparedness and response to oil spills and hazardous substance releases. EPA serves as chair of the NRT and the USCG serves as vice-chair. However, the USCG is the incident-specific Chair for the Deepwater Horizon oil spill response.

In addition to the NRT, EPA, along with representatives from other federal agencies and the states, form Regional Response Teams (RRTs) which are co-chaired by each EPA Region and its USCG counterpart. The RRTs assist the OSCs in their spill response decision making, and can help identify and mobilize specialized resources, including innovative cleanup technology solutions.

EPA is responsible for maintaining the NCP Product Schedule, which lists chemical and biological products available for federal OSCs to use in spill response and cleanup efforts based upon data submitted by the manufacturer of the product concerning, among other data points, the composition, effectiveness, and toxicity of the proposed product. Due to the unique nature of each spill and the potential range of impacts to natural resources, OSCs are consulted to determine which products, if any, should be used in a particular spill response. If the application of a product is pre-authorized by the RRT, then the OSC may decide to use the product in a particular response. If the

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product application does not have pre-authorization from the RRT, then the OSC must consult with the RRT regarding its use.

We recognize the creativity, passion and ingenuity of the public as a resource for ideas that should be tapped. Within two weeks of the explosion, EPA set up a website to enable the public to submit ideas for technology solutions to aid the cleanup effort and enable EPA to review these in an orderly and expeditious manner. EPA has welcomed innovative and environmentally safe technology solutions related to the Deepwater Horizon oil spill through its website at http://www.epa.gov/bpspill/techsolution.html. Since the events following the April 20, 2010 explosion and spill, EPA has received over 2000 submissions that represent many different technology categories including surface water containment and cleanup, air monitoring and detection, landfall cleanup, and wildlife protection and cleanup. These ideas have come from students, homemakers, scientists, small and large business owners as well as international corporations. People clearly want to contribute to the response effort.

EPA's review process includes identifying each submission into the appropriate technology category, a review by EPA technical experts, and then transmission to USCG staff stationed at the Unified Command site in Houma, LA for their consideration and possible testing or deployment. Suggestions related to the wellhead are forwarded directly to the Deepwater Horizon Unified Command BP for consideration. EPA's process is similar to that followed by other federal agencies. Since the Deepwater Horizon oil rig exploded, EPA and other federal agencies have received tens of thousands of suggestions and potential technology solutions from vendors and other members of the public both in the United States and abroad. Due to the level of response, and in the interest of more efficient use of federal resources, USCG's Research and Development Center (RDC) established the Interagency Alternative Technology Assessment Program (IATAP) on June 4, 2010 to ensure a fair, systematic, responsive, and accountable review of alternative response technologies by an

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interagency team of experts. With the endorsement of the Federal On-Scene Coordinator (USCG), IATAP joins the EPA, USCG RDC, Minerals Management Services (MMS), National Oceanic and Atmospheric Administration (NOAA), Maritime Administration (MARAD), and the US Army Corps of Engineers (USACE) in a unified service to execute the mission. EPA is currently working with other IATAP partner agencies to channel submissions into a single system to allow us to obtain the basic technical and scientific information we need to ensure a timely review of the submission and, if a technology is involved, facilitate our ability to test or deploy it in the most expeditious manner.

The USCG RDC has issued a Broad Agency Announcement (BAA) for the purpose of organizing the collection and enhancing the Deepwater Horizon Response Team assessment of technology assistance offers. White Papers can be submitted by anyone or any entity – public or private – into any one of five technology gap areas. Additional information about the process is available at the above-mentioned website address. In addition, in an effort to continue the discussion on technology solutions with our external partners, on June 5, 2010, EPA hosted the Alternative Coastal Protection and Cleanup Technology Forum in New Orleans. The discussion centered on prevention and containment, short-term approaches and bioremediation measures for oil contaminated marshes. Attendees included representatives from state, local and federal government, as well as local businesses.

Please be assured that EPA will continue to work with universities, businesses, and individuals to evaluate and promote innovative technology solutions to assist in the monitoring, identifying, and responding to potential public health and environmental concerns. EPA, in partnership with other federal, state, and local agencies, as well as other community stakeholders, will continue to devote the necessary efforts to assist in the oil spill response. At this time I welcome any questions you may have.

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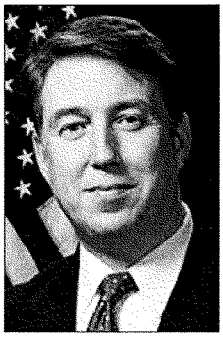
Assistant Administrator for the Office of Research and Development
Science Advisor to the EPA



Paul Anastas, Ph.D. is the Assistant Administrator for EPA's Office of Research and Development (ORD) and the Science Advisor to the Agency. Known widely as the "Father of Green Chemistry" for his groundbreaking research on the design, manufacture, and use of minimally-toxic, environmentally-friendly chemicals, Dr. Anastas has an extensive record of leadership in government, academia, and the private sector.

At the time he was nominated by President Obama to lead ORD, Dr. Anastas was the Director of the Center for Green Chemistry and Green Engineering, and the inaugural Teresa and H. John Heinz III Professor in the Practice of Chemistry for the Environment at Yale University's School of Forestry and Environmental Studies. Prior to joining the Yale faculty, Dr. Anastas was the founding Director of the Green Chemistry Institute, headquartered at the American Chemical Society in Washington, D.C. From 1999 to 2004 he worked at the White House Office of Science and Technology Policy, concluding his service there as the assistant director for the environment. Dr. Anastas began his career as a staff chemist at EPA, where he rose to the positions of chief of the Industrial Chemistry Branch, and director of the U.S. Green Chemistry Program. It was during his work at EPA that Dr. Anastas coined the term "green chemistry."

Trained as a synthetic organic chemist, Dr. Anastas' research interests have focused on the design of safer chemicals, bio-based polymers, and new methodologies of chemical synthesis that are more efficient and less hazardous to the environment. A leading writer on the subjects of sustainability, green chemistry, and green engineering, he has published ten books, including "Benign by Design," Designing Safer Polymers," "Green Engineering" and his seminal work with co-author John Warner, "Green Chemistry: Theory and Practice."

Dr. Anastas has been recognized for his pioneering work with a host of awards and accolades including the Vice President's Hammer Award, the Joseph Seifter Award for Scientific Excellence, the Nolan Sommer Award for Distinguished Contributions to Chemistry, the Greek Chemical Society Award for Contributions to Chemistry, the Inaugural Canadian Green Chemistry Award, a Scientific American 50 Award for Policy Innovation, the John Jeyes Award

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from the Royal Society of Chemistry, and an Annual Leadership in Science Award from the Council of Scientific Society Presidents. He was a Special Professor at the University of Nottingham and an Honorary Professor at Queens University in Belfast where he was also was awarded an Honorary Doctorate.

Dr. Anastas earned his B.S. from the University of Massachusetts at Boston and his M.A. and Ph.D. in chemistry from Brandeis University.

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Chair LANDRIEU. Thank you, and we have many questions, let me assure you. We will go through a first round of questioning. I would like to acknowledge Senator Hagan who has joined us, and we really appreciate her interest and support.

Let me begin with you, Admiral, because there seems to be some confusion about the numbers of submittals, and I want to ask if you could verify for the record today. You mentioned in your testimony that the Government has received 1,300 submissions; 70 have completed the initial screening process. To your knowledge, are those numbers accurate? And how many have actually been deployed, any of the new technologies deployed to date?

Admiral RÁBAGO. Yes, ma'am. We have received nearly 1,300 through the BAA process, which was initiated on June 4th. But prior to that, we received over 600 that came in via e-mail and by telephone, and those are also being processed.

Chair LANDRIEU. So you have a total of 1,900.

Admiral RÁBAGO. Approximately 1,900, yes, ma'am. And of those, we have already processed, initial screening—over 600 of those have been looked at, 114 are currently being screened, and those that have already been screened into the evaluation process are being looked at either by the Coast Guard or our interagency partners.

Chair LANDRIEU. Okay, because it is very important. Your testimony indicated some different numbers, and it is very important to get these numbers, you know, a snapshot for today, for this hearing. Can you confirm how many proposals BP has received? We understand it is 35,000. Is that your understanding?

Admiral RÁBAGO. I looked at their website myself yesterday. I saw that they had over 94,000 items in their website, but they are not all proposals. They are comments, they are a variety of things, which makes it part of the difficulty for them to have gone through and looked at it.

There are items in there that are submitted. They look like they are from businesses. I was able to only look through a few of them. It is a difficult process to get into the website, but we do have full access, and I have asked my team to go through what they see there and make sure that the submissions that we have within our BAA process match or that those people who have submitted things prior, we get them into our process.

Chair LANDRIEU. Now, you just testified—I thought I heard you say that you have full access to the BP submissions.

Admiral RÁBAGO. Correct. We can see their website, and I did look at it myself yesterday.

Chair LANDRIEU. And you can get detailed information from BP whenever you want it about the status of their review process?

Admiral RÁBAGO. There are some status reports on it, but there is just a lot of information. They are not necessarily all submittals. Some are just ideas, some are just comments. It is a lot of information, and we are going to start to go look through it and see which ones are actually proposals that could be acted upon.

Chair LANDRIEU. Okay. Of all these thousands of proposals that have been submitted to either the Government or to BP, have any today been deployed?

Admiral RÁBAGO. We have not from the BAA process actually deployed, although I have submitted an idea to the Federal on-scene coordinator for their consideration. Their operational commander has to make the decision of how to use the technology in the fight, specifically geographically where, and then how to employ it with the forces that they have under their control.

Chair LANDRIEU. So you are testifying that you have submitted one proposal to basically the front line to date.

Admiral RÁBAGO. Correct.

Chair LANDRIEU. And that you are making your best efforts to try to speed up that process.

Admiral RÁBAGO. Yes, ma'am. We want to speed it up.

We want to get those ideas there.

Chair LANDRIEU. When companies submit these ideas, you said that they have six different areas that they are evaluated by. There are three different agencies. EPA does dispersants, Incident Commander does wellhead capping, and the Coast Guard does the cleanup piece. Are businesses told within a reasonable amount of time, a few days, what category they are being evaluated in? Explain a little bit about that process for those that would be interested.

Admiral RÁBAGO. As soon as they submit it, it is followed up. They are given a tracking number and an acknowledgment that their idea has been received. The idea comes in the form of a filled-out form along with an attached three-page white paper that describes their proposal.

That product then is evaluated by our Research and Development Center. It is screened. It is an initial screening to categorize it, to put it in one of the categories, and then to decide who best to evaluate it. In some cases it is the Coast Guard. In some cases it is EPA. In other cases it may be NOAA that is evaluating it. And that is done through the interagency process, the IATAP process, and they are tracked. There are a number of people working not only within the Coast Guard but in the rest of the interagency to process these ideas, evaluate them, and determine whether they can be used in the particular—down in the Gulf. And those ideas that have merit will be given to the Federal on-scene coordinator.

Chair LANDRIEU. Do you know how many responses the Coast Guard can handle in a given day, either in-house with your reviewers or contractors that you have employed?

Admiral RÁBAGO. I do not have a specific number, but it is not just what the Coast Guard can handle, because half of my Research and Development Center is currently working on this particular issue and processing the ideas. But it is not just the Research and Development Center because they get to reach back into academia, into federally funded research and development centers, and a variety of other sources, including our own Department of Science and Technology. There are a number of sources they can reach into to ask for help for evaluation. Then, of course, there is the interagency so that if an idea can be evaluated by multiple agencies, we will do that as well. The whole goal is to quickly get a response back to the offeror that we have received their idea, next to tell them that their idea is under consideration. We may have interactions with them because oftentimes they may not have

enough information and we will have questions. We have begun that process as part of the evaluation, and then we will act on it once the technology has been evaluated and it looks to be useful in the Gulf. The goal is to get the technology into the Gulf.

Chair LANDRIEU. Okay. You also may want to, just as a suggestion, maybe give a special express line to proposals that come in from elected officials that are on the front line down in the Gulf, whether it is parish presidents or the Governors along the Gulf Coast. You know, they are there every day. They are hearing, they are listening—not that those, you know, should be expedited without the proper review, but you may want to just consider opening up an avenue for some of these elected officials who are down there and have been every day for the 58 days.

Does the Coast Guard have the ability to issue a contract immediately if a silver bullet white paper comes across your desk? I mean, if one can be identified, do you have a process in place to expedite it given the urgency of the situation?

Admiral RÁBAGO. Yes, we do. We have the ability to use funds to do some research at the level of the evaluation process, and then the Federal on-scene commander has access to funds, and obviously the responsible party has funds that can be applied to acquiring the technology and deploying it.

Chair LANDRIEU. All right. One question for you, Doctor, and then I will turn it over to Senator Snowe. It is my understanding that for certain types of technology such as dispersants, the EPA's approval is almost essential for their deployment. There has been a lot of controversy about these dispersants. So would you give just a minute to review your testimony about how quickly you all can decide whether these are safe or not? Are you, under current EPA rules, allowed to test these dispersants in the open ocean? I understand that that is not even possible now because you cannot—and if I am wrong, please correct me—put oil into the ocean for the testing, you have to do that in a laboratory setting, which may not reflect the magnitude of what we are dealing with. Could you comment on that, please?

Dr. ANASTAS. Yes. The current mechanism to get dispersants approved is outlined under subpart (j) of the statute, which requires a certain number of tests be conducted. One is for efficacy, to make sure that the dispersant functions. The other is to have toxicity testing for aquatic toxicity—this is specifically on mysid shrimp and silverside fish—to assure acute toxicity levels are appropriate. That is required to be submitted to the Agency before approval and inclusion on the National Contingency Plan list of dispersants.

Further testing to be conducted by the Agency, you are absolutely right, Senator, that currently the testing for dispersants is not done in the open ocean. It is done in a laboratory setting.

Chair LANDRIEU. Well, I think it is important for this record to reflect that Canada and Norway conduct controlled oil spills to test different cleanup technologies. In the past, MMS has participated in one of the Norwegian tests. The United States, though, on the other hand, under current law does not conduct controlled spills, and it is not legal at the current time. So I think we have got to really reevaluate some of these processes if we are going to try to

lead the world in deepwater ocean technology. But we will continue that line of questioning. Let me turn it over to Senator Snowe.

Senator SNOWE. Thank you, Chair Landrieu. Just to follow up on that question, Dr. Anastas, exactly what did EPA tell BP with the use of these dispersants, especially the subsea applications?

Dr. ANASTAS. The subsea application of the dispersants was something that was reviewed and approved by the EPA in a very limited capacity. So it did give approval for small amounts to proceed. Part of the reason for that is, one, in the initial testing, the several initial tests, it had shown to be effective in dispersing the oil at the subsea. And, secondly, it is effective at a far lower level, far lower quantity than surface application. And so the Agency did give approval for initial use of subsea application of the dispersants.

Senator SNOWE. And what about surface dispersants. What did EPA tell BP?

Dr. ANASTAS. The Agency is not required to give approval for that because the current blends allow for application of approved dispersants in this situation on the surface.

Senator SNOWE. So EPA did not send a letter to BP to stop using surface dispersants?

Dr. ANASTAS. Subsequent to the initial application on the surface, the EPA did seek to minimize the use of dispersants, minimize the quantity of dispersants being applied on the surface and sub-surface.

Senator SNOWE. As you know, there is considerable concern among local officials in terms of using these dispersants. Are you aware of that?

Dr. ANASTAS. I am aware that there is concern that many have expressed about the quantity of dispersants used, which is why the Administrator made it clear that she wants to minimize the use of dispersants to the most effective level.

Senator SNOWE. If we have not tested them, why would we be using them in the subsea below the surface, and at these depths and in these quantities? Why would we be doing that?

Dr. ANASTAS. The EPA has received testing data on all substances on the National Contingency Plan approved list. We do have testing data both on the efficacy and on the toxicity of all dispersants, including the dispersants that we——

Senator SNOWE. In terms of these quantities, 15,000 gallons a day?

Dr. ANASTAS. This is absolutely unprecedented in terms of the quantity of oil being released into the Gulf and in terms of the quantity that is being released——

Senator SNOWE. I know. I am speaking of the 15,000 gallons, though. We have never approved that.

Dr. ANASTAS. These dispersants have never been used at the subsea.

Senator SNOWE. But there has been no testing at the subsea applications. Is that correct? I would just like to know.

Dr. ANASTAS. Correct. The only testing that was done is in preparation for—in this event.

Senator SNOWE. Well, as I mentioned earlier, there is considerable concern about the use of these dispersants and with local offi-

cials saying, "Why don't we stop spraying dispersants? It has literally sunk to the bottom, coating the bay." I want somebody to tell me why these dispersants are not doing what they said they are going to do, and I want somebody to tell me why we do not stop spraying dispersants? These local officials obviously are very concerned.

Dr. ANASTAS. I guess I would like to address that. I think that anytime we are putting formulations and substances into the ocean, we have to do that very thoughtfully. There are toxic chemicals that are going into the environment, and they are constituents of the oil. We are looking at benzene, toluene, xylene, ethyl benzene that are going in in tremendous quantities. The dispersants that are being used are to make those constituents and the hydrocarbons more digestible to the microbes and to make them be able to degrade far faster. And all of the data suggests that the oil will degrade far faster with the application of these dispersants.

So while I think we have to do it with utmost concern and constant monitoring and sampling, I do think that that was the underlying reason.

Senator SNOWE. In the process, Admiral Rábago, and as well for you, Dr. Anastas, I am still not understanding why we have two parallel procedures between the Federal Government and BP. There is an imperative here that it is in the national public interest given the catastrophe at hand. So wouldn't it be crucial for the Government to amass the resources to deploy all of the equipment and the personnel necessary to contain the spread of this oil and to mitigate and remediate this spill? My concern is it seems to be a very bureaucratic process right now. Not to say to expedite and to make hasty decisions but, rather, I am not clear what good ideas that are going to BP come to your attention. And why is it that BP would be dictating ultimately what would be a good idea. Their interests are not necessarily in our public interest. Obviously, we have a concern about making sure that we can do everything we can to develop an approach that is going to move very quickly to deploy the resources and to contain the spread and dispersal of this oil so it does not contaminate the marshes and the wetlands and reach into the shores in Alabama now and potentially Florida.

So this is the question as to why we developed two procedures, because I do not understand how these decisions intersect. Why aren't you the one in charge, why don't we have one individual in charge to oversee all of the ideas that are submitted to BP as well as to the Government so we have a uniform, synchronized process that is moving in tandem so that we, the United States Government on behalf of the American people, make the decisions, dictate the direction, make the approval of technologies and remediation efforts that are solely in our public interest?

Admiral RÁBAGO. That is our goal, ma'am, to do exactly that. We want one process, and that is why we built the system that we have with the Broad Agency Announcement to be able to pull those in. We also have to look back at what occurred previous to that, which is what I am doing, taking a look at the ideas that were submitted from all places and make sure that they get put in and that we get the right kind of technical information to be able to evaluate

them, and if they have merit, get them into the fight as quickly as possible.

Senator SNOWE. Well, let me understand this. If there is an idea that has been submitted to BP and it is not submitted to the Government, to you, and they reject that idea for whatever reasons, it may well be a good idea. Maybe it is too costly. Maybe they have not given it the attention it deserves. How would that come to your attention?

Admiral RÁBAGO. We are in the process of taking a look at all the information that was submitted to BP and make sure that those ideas that have been submitted, that are proposals for solutions for the situation in the Gulf are processed and we talk to those individuals and get them to submit the information required for us to conduct a thorough evaluation of them.

Senator SNOWE. So all the ideas submitted to BP are also reviewed, all of the ones that are submitted to BP are reviewed by you?

Admiral RÁBAGO. Not yet. We just have gotten full access to their database. We have begun to look at the information that is in there. Not all of the information, those 94,000 items, are proposals. We have to kind of go through that information, find the things that are proposals, and begin to do things with that. We have begun that process.

Senator SNOWE. How many people are assigned to you?

Admiral RÁBAGO. In dealing with this particular issue, in terms of my Research and Development Center, I have 86 people in New London, Connecticut; another 15 in Washington, D.C., that are doing that. And half of those people right now are involved directly in the review of these ideas. But, again, they are not just—they are not the only ones doing that. They are reaching back into academia, federally funded research and development centers, and a variety of other sources, including working with our interagency partners, to get these ideas processed as quickly as possible.

Senator SNOWE. It hardly sounds a sufficient amount of personnel for the task at hand.

Admiral RÁBAGO. That is why we want to reach back in and access the whole of academia and the other research and development centers and a variety of other sources. There are a lot of people that we are going to bring——

Senator SNOWE. Well, all I can say is there is a time factor involved here.

Admiral RÁBAGO. Yes, ma'am.

Senator SNOWE. I mean, that is the point. And I think that is the frustration that people are facing and seeing and witnessing and what is happening with the dispersal of the oil. We should have pre-positioned—as the Coast Guard does remarkably and did in Hurricane Katrina, as many assets as possible for the worst-case scenario. And once it was underway, all of the assets and all of the boomers and skimmers and other equipment and the personnel should have been deployed to the coastlines all through the Gulf to make sure that we could do everything to contain the spread of oil before it reached the shores.

Admiral RÁBAGO. Yes, ma'am.

Chair LANDRIEU. Thank you, Senator Snowe.

Senator Shaheen.

Senator SHAHEEN. Thank you, Madam Chairman.

Last week, Secretary Chu announced that data about the oil spill is available now online through the Department of Energy's website, and it includes schematics, pressure tests, diagnostic results, that sort of thing. And this is obviously critical information for anybody who is working on innovative technologies that might help address the spill.

I continue to hear, however, from independent scientists, from small businesses, from engineers about the lack of information and transparency about what is happening in the Gulf.

Admiral, you have mentioned your website that is available for small business. Dr. Anastas, you have mentioned the website through EPA. How are all of these sites being coordinated? Does the Unified Command have plans to make more information available for those people—both for the public and for those people who might be working on potential technologies to address the oil spill cleanup? How can we make sure there is as much information available as possible? And to your knowledge, is there critical information that is being withheld for any reason? So I have given you about four questions, and, Admiral, I think maybe if you would start.

Admiral RÁBAGO. Yes, ma'am. As far as providing access to information, I know that the information group that is associated with the National Incident Command does put out a good deal of information. We also have received as part of our BAA process not only proposals but questions about how either companies or individuals can help, and we respond to those queries as well.

There is a tremendous amount of information flow. Our website is one place to do that. There are multiple sources of information. Our website that we have through the Federal Business Opportunities website is a gateway for individuals to submit those ideas that they believe will bring innovation and solutions to the problem in the Gulf.

So that is our methodology for getting that information. We evaluate it and we answer back, which was not occurring before. We do answer back everybody that submits something, and we are evaluating it and tracking it. So we are working to make the information flow more transparent all the time and more responsive to those that submit suggestions and ideas.

Senator SHAHEEN. And is there any information, to your knowledge, that is being withheld from the public about what is happening?

Admiral RÁBAGO. No, ma'am. I am not aware of any at all.

Senator SHAHEEN. Doctor.

Dr. ANASTAS. Transparency has been at the center of our data generation/collection efforts. One of the things that the agency has done from early on is strive to get all of the data that we are collecting, which is considerable, other agencies are generating significant data as well, on our sampling data, our air data, our monitoring data, in as rapid a fashion as we receive it, and it is—we receive it. We make sure that it is correct. It goes immediately up on our main website for everybody to see. So this is something that is extremely important, and I agree with you.

Senator SHAHEEN. Thank you. Chair Landrieu asked a question that I am not sure—that if it got an answer, I missed it. That is, of the suggestions and ideas that have been reviewed by the various entities involved, are there any that are actually being put to use right now in response to the spill? And can you explain very briefly what those are?

Admiral RÁBAGO. Recently, we did submit one to the Federal on-scene coordinator. It is not yet being used. I know that some of the ideas were submitted earlier to the responsible party, and they did employ those with the oversight of the Federal on-scene coordinator. And there are some new technologies that have been deployed into the Gulf.

For the Coast Guard and for the interagency process that we have started, we have not yet brought a technology and had it actually be applied, but that is coming soon. We have a number of ideas that are working their way through, and some of them are very good ideas, and we expect to get them to the Federal on-scene coordinator soon.

Senator SHAHEEN. Dr. Anastas, is there anything that the EPA has heard or seen that has been put to use?

Dr. ANASTAS. The way that the Agency works is by bringing in these innovative ideas, having a team that taps into all of the broad expertise in the agency, identifies those which have the potential to be effective and environmentally safe and ensure that they are forwarded to the proper people responsible for deployment and implementation. So it is a screening and evaluation process to make sure it gets into the right hands for decisionmaking.

Senator SHAHEEN. So you might not know if they actually got put to use? Is that what you are saying?

Dr. ANASTAS. That is correct.

Senator SHAHEEN. Thank you.

Chair LANDRIEU. Thank you, Senator.

If the Senators do not mind, Senator Levin has joined us. He is actually chairing an Armed Services hearing right now, and so he slipped out momentarily to come over, and I would like to recognize him now. And I want to say before he speaks, as the leader of the defense committee, the Armed Services Committee, which I had the pleasure to serve on for 4 years, he has been an outstanding leader on bringing new technology to the battlefield, actually listening to the soldiers on the battlefield. I think his experience and his expertise in this area, as a member of this Committee, can help us because in many ways this is a battlefield out in the Gulf, and I thank you for attending the hearing and will recognize you now.

Senator LEVIN. Madam Chairman, thank you so much for that. Thank you for your extraordinary and determined, tenacious leadership on this issue.

I have just a couple questions before I get to a technology question, which I will get to. And if this question has been asked and answered, forgive me. I am trying to get a feel as to how much equipment of various types—and I will go through it—is needed and how much is there. Okay?

Admiral, let me ask you, about how much boom do we have down there?

Admiral RÁBAGO. We have two kinds of boom that we are tracking: the mechanical boom that basically provides a boundary, and we have over 2 million feet of that boom deployed. We also have sorbent boom which floats on the water and absorbs oil, and there is over 3 million feet of that boom deployed. They are procuring more of it.

Senator LEVIN. Well, that is what I want to find out. How much of that do you need? Is that half of what we need? A third of what we need? What is it?

Admiral RÁBAGO. I will have to get back the exact answer, but I know that we are going to continue to need more. Especially if the weather turns there and there are losses in the wear and tear of existing boom, we are going to need to replace it.

Senator LEVIN. Do we have half of what we need?

Admiral RÁBAGO. I will have to get back exactly. I do not have that information.

Senator LEVIN. How about skimmers? Do we have half of the skimmers we need?

Admiral RÁBAGO. We need more skimmers.

Senator LEVIN. Do we have half of what we need?

Admiral RÁBAGO. I will have to get back to you on the specific figure, but we do need more.

Senator LEVIN. How many barges do we need? Do we have half the barges we need?

Admiral RÁBAGO. We need more barges to be able to hold the oil.

Senator LEVIN. And you do not know what percentage we have of what we need.

Admiral RÁBAGO. I know we have over 8,000 vessels——

Senator LEVIN. No, but in terms of the percentage of what we need, do you have a figure on that for barges?

Admiral RÁBAGO. I will get back to you for the record on that, sir.

Senator LEVIN. Okay. Same thing with tankers, same thing with dispersants, same thing with trainers.

Someone like me is frustrated. I can just try to imagine what folks who live there are going through—I try to imagine, just to get a feel as to what resources are there compared to what the need is, and not just as a human being impacted. I happen to be familiar with a company in my home state which is a major player in the cleanup business. It is called Marine Pollution Control. They are one of the biggest—they happen, technically, to be a small business, by the way. But they are still one of the major players in the world in cleanup. They have made dozens and dozens and dozens, over a hundred phone calls. They go all over the world to clean up. They were part of the Exxon Valdez cleanup, and I think they have—had half of the boom which they have offered has been used. And, by the way, I am not trying to tout this company. If you have everything you need down there, great. Okay? I am not here trying to promote a Michigan company, even though they are a fabulous company. That is not my purpose. I am here to try to understand why, if you have less than you need, isn't one of the major companies—why aren't all of the companies responded to?

Now, they have got 14 tankers, this company, 14 tankers, each of which can hold thousands of gallons. None have been called. Two

barges, neither have been called. Four skimmers, none being called upon. They have got still 5,000 feet of boom. I think half of the boom that they have has been called for and that is it. But all the other capabilities that they have are just waiting to be called upon.

I do not get it, and this is something I know personally because of the presence of this company. It happens to be in my hometown, not just in my home state. So I just would urge you—okay? There may be dozens of companies like them. There may be hundreds of companies like them. For them not to feel like, hey, to get responses to the hundreds of inquiries that they literally have made and to get three responses and to have half of one of the things they can provide called upon and that is it is totally unacceptable to me.

They also have—and here is a technology, and I know this is the focus of the hearing, and forgive me if I have gone astray, but it is something I have been wanting to ask for a long time. They have a technology. It is a submersible submarine. It is still in development, but it has been used effectively under some circumstances. It has been offered. Just let them know, yes or no. They need an answer. It can go down 200 feet. It cannot get to the 5,000-foot level, but what it can do probably is clean up the bottom up to a 200-foot level, which is going to be very important. Okay?

My experience with the hometown company tells me something is wrong here in terms of coordination, and it is very discouraging to me personally, and I would appreciate the answers to those questions, Admiral.

I thank the Chairman for letting me intervene here, perhaps out of turn.

Chair LANDRIEU. No, thank you, Senator, and you are always welcome, and I know that you have got to get back in just a moment to the Armed Services Committee.

But I do think that the Senator has expressed a general frustration on behalf of businesses across the country that feel like they have very relevant technologies and they want just an opportunity to showcase what they can do, particularly when they see night after night, day after day, the situation seeming to get worse as opposed to better. So I know that you all are scrambling. We ask you just to scramble a little harder, organize a little better.

I would like to recognize Senator Cardin. We are in our first line of questioning, Senator, if you have any questions before we go to our second panel, or brief comments.

Thank you, Senator Levin.

Senator CARDIN. Senator Landrieu, Chairman Landrieu, thank you very much, and let me just—and to Senator Snowe, we very much appreciate this hearing.

I was down in the Gulf, as you know, last Friday and had a chance to be with Admiral Watson, who—first of all, let me say, I know you all are working 24/7. I know that you are working as hard as you can. You are as frustrated as everyone is as to the unprecedented spill that is taking place. The fact that you have oil on the surface but then it disperses and shows up on our shorelines in a very challenging way.

We had a chance to see the operations by a lot of small companies, putting out booms and doing the skimming and doing every-

thing they could to protect the Louisiana coast. But, unfortunately, we also saw the results of oil on the shore, on sensitive marshes and islands, and saw the inability to hold accountable the contractors to maintain the booms that were critically important to protect the sensitive shorelines.

I again want to just point out that Admiral Watson I think took action as a result of that, and that is exactly what we were intending, and I know that corrective measures have been put in place, and that is what we need.

I guess my point is that you are in charge. This is the Government's responsibility to respond to the spill. Now, the cost is going to be paid by BP and its affiliates. We know that. But the chain of command is ours, and, therefore, it is up to us to engage the talent of this nation and, if necessary, internationally to figure out how we can minimize the damage being caused to the Gulf and other regions.

That requires us to use the ingenuity of small companies. That is where the talent is in this country to find ways to innovate and take care of new challenges. We find that we get more innovation, more of our new discoveries come from the small companies of this nation. I guess my plea to you is that we have to be much more effective in energizing that asset that this nation has.

I have talked to some of the small business owners down in the Gulf, I have talked to small business owners around the nation who have said, look, you know, we would like to get involved. So I do underscore the points that the members of this Committee have made that it is not BP's responsibility, it is our responsibility to respond to this challenge. BP is going to pay the cost. We know that. But I think it is incumbent upon us to figure out how we can energize the talent of this nation to confront this challenge, to minimize the damage, and we know the damage is going to be severe, but to minimize it the best that we can. And every day that we lose, the devastation is going to be much worse. And every part of this nation is going to feel it. I know my own area in Maryland, we have a lot of migratory wildlife that visits the Gulf of Mexico. We do not know if they will be returning to our area. So we all have a stake in this.

Thank you, madam Chair.

Chair LANDRIEU. Thank you.

Yes, Senator Snowe wants one final question. Then we are going to move to our second panel.

Senator SNOWE. For clarification, Dr. Anastas, on this whole issue of Corexit, so that we understand, on May 26th EPA sent a letter, did they not, issuing a directive to BP to stop using a surface dispersant, the Corexit, and limit the subsea to 15,000 gallons? Is that correct? And since then, as I understand it, 185,000 gallons of surface dispersant has been applied on 14 separate days, and on 4 days more than 15,000 gallons have been applied subsea. So why hasn't this practice stopped?

Dr. ANASTAS. The Administrator has communicated with BP to minimize the use of dispersants wherever possible and to seek approval when the amount of dispersant goes above a certain level.

Senator SNOWE. Well, that is on the subsea, but not for surface. I am not understanding the stop and the minimizing. It is either

stopping entirely the use of it or minimizing it, and EPA asked for stopping it. So that is what I am not clear on, because there have been a number of questions raised on this issue.

Dr. ANASTAS. The National Contingency Plan allows for application of approved dispersants.

Senator SNOWE. In particular, Corexit?

Dr. ANASTAS. Any approved dispersant. It does not need to be Corexit. The Administrator did express, the Agency did express concerns about ensuring that the dispersant used would be the least toxic as possible, and what is happening in real time is the Agency is engaged in the science to find out if there are any alternative dispersants that are less toxic.

Senator SNOWE. Well, it is my understanding that EPA issued a directive to BP to stop using it, the surface dispersant, and limit the subsea. So obviously we need to get a clarification on this question.

Dr. ANASTAS. The directive was to identify a less toxic dispersant or explain why it could not identify a less toxic dispersant. They did not identify a less toxic dispersant, and so EPA is engaged currently in the science of determining if there are any other dispersants that would have reduced toxicity.

Senator SNOWE. So in the meantime, BP can continue the use of the surface dispersant?

Dr. ANASTAS. With the understanding that the use of dispersant will be minimized.

Senator SNOWE. Thank you.

Chair LANDRIEU. Thank you, Senator Snowe, and to try to end this first panel on a slightly more positive note, we did receive an e-mail from a 12-year-old Louisiana-based environmental remediation service company that said for several weeks they were unable to get any response. They finally got their product submitted, and just last week, they sent this information to one of our PTAC contacts that they received verbal approval from BP accepting this technology to start their application today.

So we have one company that sent a positive e-mail, but there are thousands still waiting, and that is what this hearing is about.

So I thank you all. We have much more information to pursue from you. I know that you are going to stay here in the room to hear from the second panel at my request, so thank you and we will move to the second panel.

If the second panel would come forward. Eric Smith serves as the Associate Director of Tulane Energy Institute. He is also a Clinical Finance Professor in the Freeman Business School at Tulane. He has extensive background in business development and energy and created and teaches the mandatory course that lead to an energy specialist certificate at Tulane. We are glad, Doctor, to have you here.

Dan Parker is from Kentucky. Mr. Parker founded C.I.Agent Solutions. He served as President and Member of the Board of Directors of that company. He was successful in getting the C.I.Agent listed on the EPA's National Contingency Plan. We look forward to his testimony today.

Heather Baird serves as Vice President of Corporate Communications for MicroSorb Environmental Products that I understand is being considered as we speak.

Also, Dr. Carys Mitchelmore is currently an Associate Professor at the University of Maryland Center for Environmental Science, the Chesapeake Biological Laboratory. Dr. Mitchelmore earned her Ph.D. from the University of Birmingham, and she has a great deal of expertise to share with us on this subject.

And, finally, we have Mr. Kevin Costner, who, along with his brother, in 1995 purchased Ocean Therapy Solutions, a company developing a oil separation machine. We are very pleased to have Mr. Costner with us. He has been spending a lot of time down in the Gulf Coast, as all of you have been focused on this issue, and we look forward to your testimony this morning.

Let's begin with you, Mr. Smith.

STATEMENT OF ERIC N. SMITH, ASSOCIATE DIRECTOR, TULANE ENERGY INSTITUTE, TULANE UNIVERSITY

Mr. SMITH. Thank you, Madam Chair.

Chair LANDRIEU. And if you would press your "talk" button and speak right into the microphone, please.

Mr. SMITH. Thank you, Madam Chair, Ranking Member Snowe, and members of the Committee for inviting me to testify this morning on what I think has become a very significant issue.

I would like to speak about this problem associated with the current spill response in the U.S. Gulf and the apparent inability of the company and agencies involved to provide timely responses to the thousands of suggestions being generated by concerned citizens and small businesses.

There are two corollary problems here. One is small businesses typically lack the commercial recognition to gain attention and access to relevant Federal agencies that provide funding to advance improvements in prevention and response technologies. The second issue, the specifics, BP, the MMS, and the Coast Guard are practically constrained to dealing with known quantities when setting up supply chains to approve and transact business with potential suppliers. Companies or individuals without existing commercial relationships find it difficult to establish credibility in normal times. During an emergency it is even more difficult.

The solution perhaps that we suggest is the establishment of an independent third-party team to screen proposals and to respond either positively or negatively to all suggestions. This national clearinghouse would use existing faculty at universities having the requisite skill sets and prior experience in navigating company supply chains and Federal-State agencies and to efficiently screen suggestions, separate the wheat from the chaff, and provide concise information to relevant agencies and companies so that they can make logical investment and purchase decisions.

Tulane and other universities have experience with screening proposals, assisting those with real potential and enhancing their ability to elicit contracts for Federal research funding. Our team at Tulane already includes experts in both conventional and renewable energy resources, energy economics, medicine, public health, environmental studies, and biomolecular research. Moreover, we

have a reputation for public outreach in times of crisis as a result of our university-wide efforts surrounding the response to Hurricane Katrina.

We also have been successful in developing research partnerships between Government and universities in Louisiana that extend beyond Tulane's boundaries through CPERC, a consortium of Louisiana-based schools that partner on specific research projects. Because Tulane is the only private university in the group, we have the flexibility to respond more quickly to emergency situations and to then bring other schools into the team.

Having a good product idea is only half the battle. We all know that the balance of commercialization involves the sometimes arcane activities of establishing intellectual property rights, establishing overall economic and financial viability—in a word, writing the business plan, getting it submitted. Essentially we propose to establish this clearinghouse using existing infrastructure and communication links where new ideas can be screened, grants formulated, and new businesses incubated. Those ideas that are too early or in our view non-starters will still receive a thoughtful letter outlining the reasons for their rejection. Our overarching goal is to break up the logjam of proposals reaching the agencies participating in the spill response and to make sure the good ideas that are currently buried in this deluge of paper see the light of day in a timely manner. We believe that Tulane University is suited to provide that service.

Thank you, Madam Chair.

[The prepared statement of Mr. Smith follows:]

UNITED STATES SENATE
COMMITTEE ON SMALL BUSINESS AND ENTREPRENEURSHIP

"Harnessing Small Business Innovation:
Utilizing Small Business Research and Technology for Gulf Coast Oil Cleanup"

TESTIMONY OF ERIC N. SMITH

CLINICAL FINANCE PROFESSOR - A.B. FREEMAN SCHOOL OF BUSINESS

ASSOCIATE DIRECTOR -- TULANE ENERGY INSTITUTE

TULANE UNIVERSITY

Thursday, June 17, 2010

Thank you, Chairwoman Landrieu, Ranking Member Snowe and members of the Committee for inviting me to testify this morning on what is becoming a significant issue. My name is Eric Smith and I am a Clinical Professor and Associate Director of the Tulane Energy Institute at Tulane University in New Orleans, Louisiana.

The Problem: Lack of Capacity at the Federal Level to Evaluate the Deluge of Proposals Related To Oil Spill

Recently a number of us at Tulane, and at other universities along the Gulf Coast, have been inundated by pleas for help by small business persons who believe that they have good ideas related to the oil spill, ranging from innovative approaches to stopping the spill to various methods for mitigating the effects of the spill on both the coastal and marine ecosystems of the Gulf Coast. The one thing all of these people emphasize is that they feel they are being ignored or stalled by the authorities at the Unified Command Center, at BP, at the MMS, at the Coast Guard, and at other State and Federal agencies involved in spill response activities.

Despite well publicized telephone numbers and web sites that provide forms for proposing solutions, the sheer volume of ideas coming into these organizations argues against prompt responses and seems to have overwhelmed the ability of agency personnel to answer citizens in

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a timely manner. In truth, the people most capable of responding to these ideas are burning the candle at both ends, working on solving the immediate problem—stopping the oil. To expect them to drop everything to consider thousands of new ideas is unrealistic. However, these ideas cannot and should not be ignored as it could potentially limit the clean-up and recovery of the spill.

My personal experience during this crisis has exposed me to multiple ideas ranging from mechanical solutions for plugging rogue wells in deep water to fairly detailed proposals for high tech absorbents for use in clean up operations. At the same time, I have also heard from more than one source about the possibility of using a nuclear solution, if necessary, to blow the well a part. Clearly, I would expect these to be a sampling of what I can only imagine the Federal government is receiving a on a daily basis.

When practitioners and the Federal government's response team are up to their *derrieres* in alligators it sometimes falls to the academic community to take the long view and worry about draining the swamp at some point in the intermediate future.

One Solution: A National Clearinghouse for Evaluation and Assessment of Research and Technology Related to the Oil Spill

As we all know, having good product ideas is only half the battle. The balance of commercialization involves the sometimes arcane activities of establishing intellectual property rights, passing certification requirements, getting on bid lists, winning bids, developing supply chains, and establishing overall economic and financial viability. In response to the oil spill and the complexity of navigating the Federal research landscape, Tulane University's administration has assembled a team of faculty experts in a number of energy, environmental, public health exposure, and economic disciplines to support America's small businesses as they work to provide products that will prevent future oil spills and mitigate the after-effects of current and future spills on ecology and our communities.

The overriding goal of this group is to ultimately create a single clearinghouse where new ideas related to the oil spill, or to its effects, can be screened; grant proposals can be formulated to support promising innovations; new business ideas can be incubated; and successful routes to market introduction can be realized. In addition, and perhaps most importantly, this clearinghouse would provide prompt responses to citizens who feel they are being ignored by the corporate-governmental infrastructure.

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Tulane has considerable experience in precisely this role as a result of providing support to the wider community during the aftermath of Hurricane Katrina. In addition, Tulane has a strong history and ongoing efforts of outreach to the business community to assist start up entrepreneurs, including those involved in oil and gas service activities. The University is also an established research university with experience in both public and private funding enterprises—including most Federal agencies involved with the oil spill effort. And finally, Tulane University is dedicated to public service, social innovation, and social entrepreneurship—elements that will be essential in addressing the potential public health, economic, and environmental fallout from this disaster.

Assuming we are successful in collaborating with the Federal government in organizing this clearinghouse, we will begin immediate assessment and evaluation of new technologies and innovative ideas through field tests and laboratory demonstrations. The end result of our review in some cases will be a letter explaining what is and is not technically possible and what is and is not economically practical about certain proposals. Ideas that fail this initial screening will still be responded to with a customized, thoughtful letter explaining why we believe they will not work in this specific situation.

Those ideas that do show potential will be forwarded, along with a technical critique, similar to those used in academic peer reviews, to designated government entities. The report will include a concise description of the intellectual property in question, development budget, a business plan, and a recommendation on how to proceed toward full commercialization. In many cases, these reports will outline a need for additional research or certification that we or other universities would be interested in performing. It is important to note that although Tulane provides the initial screening service, it does not mean that Tulane has any exclusive right to pursue Federal funding for these proposals—instead that would fall to the initial applicant.

Tulane's Action and Next Steps

In addition to assembling this internal working group comprised of experts from across Tulane, our faculty are serving as a resource for federal, state and local officials by testing water, soil and air; recommending ways to reduce the oil's impact and researching the effects of this disaster. Tulane is also pursuing grants to further investigate the immediate and long-term consequences of this disaster and assisting in providing health care for many of the fishermen idled by the oil leak. Tulane students, in addition to standing ready to assist in the clean-up, are helping track the oil's landfall.

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Tulane University, because of its capabilities and experience, is ideally suited to provide a clearinghouse to vet ideas for Federal agencies. A clearinghouse would allow the Federal government more time to focus on stopping the spill and clean-up, while at the same time focusing Federal financial support on the best projects from across the country that can ultimately move new unproven ideas to practical solutions to pressing cultural, economic, ecological, and public health problems along the Gulf Coast.

Tulane University is prepared to spend a small amount of our own seed money developing the framework for a clearing center for proposals related to the oil spill and brought forward by small businesses, NGOs and individuals. While we know that we cannot fund 100% of this effort, we are willing to start this process, recognizing time is of the essence, and ideally form a Federal partnership in the near future. However, we cannot expend these limited funds without the assurance that Federal funding will be available to fully execute a professional examination of the more promising ideas that are uncovered by the process.

For the record, I've attached copies of two brochures which describe some of the existing efforts at the A.B. Freeman School of Business as well as a recent white paper describing the interdepartmental unit we would propose as an effective way to radically reduce the backlog of unanswered ideas that have inundated the governmental agencies. As you might imagine, Tulane University has personal experience in recovery from catastrophic disasters and in rebuilding stronger than before.

Thank you for your time and I will be happy to answer any questions the Committee may have.

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BIOGRAPHY OF ERIC N. SMITH

CLINICAL FINANCE PROFESSOR - A.B. FREEMAN SCHOOL OF BUSINESS

ASSOCIATE DIRECTOR – TULANE ENERGY INSTITUTE

TULANE UNIVERSITY

Prof. Eric N. Smith provides market analysis and economic research on a variety of issues affecting the energy sector. Examples include a series of reports on the potential for importing LNG into the US, studies on the economic impact of unconventional shale gas development on US supplies of natural gas, reports on the use of Petroleum Coke as a feed stock for power generation and ongoing research into the use of bio-butanol as a substitute for ethanol. In addition, he teaches the required introductory courses leading to the energy specialization certificate available to both undergraduate and graduate level students. Finally, he functions as the public face of the University and the Energy Institute, providing requested information to local and regional media on a wide variety of energy related subjects.

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Chair LANDRIEU. Thank you. Mr. Parker. Please pull the microphone as close to your mouth as possible. If you all could push a little bit over to give him more space.

Mr. PARKER. I am going to defer to Dan Koons, who is the author of the paper, and then I will take all the questions.

Chair LANDRIEU. Okay.

STATEMENT OF DAN KOONS, C.I.AGENT SOLUTIONS, ACCOMPANIED BY DAN PARKER, FOUND AND CHIEF EXECUTIVE OFFICER, C.I.AGENT SOLUTIONS

Mr. KOONS. Madam Chair, distinguished members, I appear before the Committee to testify on behalf of the thousands of U.S. citizens that have presented ideas and offered alternative technologies to assist in the ongoing spill. The alternative technology I am here to testify concerns the use of solidifiers, C.I.Agent. C.I.Agent Solutions is a small, Kentucky-based company. C.I.Agent is a proprietary blend of U.S. food-grade polymers which are non-toxic, non-corrosive, non-carcinogenic, non-hazardous, and they are typically used to manufacture food or medical devices such as IV bags, surgical gloves, and syringes.

C.I.Agent polymers have been listed as a solidifier on the NCP Product Schedule since early 1994. The hydrocarbons, once solidified by C.I.Agent, are 100 percent recyclable. They can be used as fuel, as raw materials for asphalt, plastic, and rubber.

C.I.Agent Solutions personnel have regularly attended RRT meetings across the Nation for the past 10 years trying to get the regulatory community to examine, study, and recognize the effectiveness of using C.I.Agent solidifiers as an alternative method of oil spill cleanup. Our case studies actually show that using solidifiers will reduce the environmental impact, the cost of cleanup on average of 50 to 80 percent.

This brings me to the reason we believe that alternative technologies are being shut out of this current spill. The reason does not lie at any single entity—not with BP, not with the U.S. Coast Guard, not with the Federal or State agencies currently working on the spill. In fact, every one of these groups is fully engaged in following their prescribed duties as set forth in the National Incident Management System. The NIMS was created in 2003 in order to have a consistent nationwide template to follow in the event of a national crisis.

We do have national response teams, regional response teams, area and local response teams on site, and they are all following their respective playbooks. However, vendors have had very little access or opportunity to bring technology forward. Vendors are not permitted to attend the national response team meetings. Vendors do attend, observe, and occasionally participate in the RRT meetings.

The system does not encourage or promote active research of new technology. It simply is not a priority. New technology stands on the sidelines while everybody dutiful follows an outdated playbook.

The following are examples of technology proffered by C.I.Agent Solutions over the last 40 days:

On April 26th, BP did deploy C.I.Agents to Houma, Louisiana, to consult on shoreline protection.

On the 31st, we undergone the contract on Dauphin Island to protect the nesting habitat on the north shore.

On May 12th, BP made a request to use C.I.Agent at the wellhead. The request was assigned to an ARTES Committee, which is an alternative response tool evaluation system committee. We have yet to be asked to participate in the ARTES process as required under the ARTES protocols and even after a number of written requests to the committee, still no response.

On the 20th of May, C.I.Agent Solutions brought in from our Australia group a marine engineer along with a complete advanced system to apply and recover solidifiers. The ARTES committee was provided information, PowerPoints. Still no response.

The C.I.Agent Solutions' cannon is currently being used in Australia on oil spills, for vessel hull cleaning, and shoreline cleanup.

All the agencies recognized the value of these systems but have yet been unable to adopt them. We brought a water-testing device, offered four of them free to agencies, both State and local. The C.L.A.M. actually monitors water levels 100 times greater than the present methodology. But in every case, the agencies told us the value of the system was really something they could use, but it was outside the protocols and they could not use it.

The final road block prohibiting the new technology, it seems to me, is in the response industry itself. We have met with the chief executives of nearly every response agency in the Nation over the last 10 years trying to get them to adopt solidifiers as part of their response capabilities. Without exception, we have been told that they know our technology works, but they are not going to use it until someone makes them because they sell labor.

In 2005, after Hurricane Katrina,, C.I.Agent——

Chair LANDRIEU. Because of what? You are going to have to——

Mr. KOONS. I am sorry.

Chair LANDRIEU. They are not going to use it because of what?

Mr. KOONS. They sell labor, not solutions.

Chair LANDRIEU. Okay.

Mr. KOONS. In 2005, Hurricane Katrina, C.I.Agent was brought to Bayou Le Batre by the U.S. Coast Guard Gulf strike team to clean up pockets of oil. We were asked to leave by the response companies, being told that our methodologies was too quick, so we left.

In 2008, we were brought in for the Mississippi oil spill, a barge and tanker spill. This was by the U.S. Coast Guard and the barge owner. Again, the responsible OSRO refused to use our technology, actually saying that they are not going to use solidifiers because they were making too much money.

In 2010, we presented an option of using beach cleaning equipment to remove tar balls from the current spill. The equipment we proposed $3,400 a day, takes the place of 300 laborers. The daily cost of laborers is $108,000 per shift.

These are just examples of technology that have been brought to bear, and because the response companies and their involvement at the level of control within the NIMS program, the new technology is just simply not being applied.

Chair LANDRIEU. You are going to have to wrap up, if you would.

Mr. KOONS. Okay. In conclusion, it is my belief that the consequences unfolding before us in the Gulf today are exposing a weakness in the National Incident Command System, and our National Response Strategy actually inhibits the introduction of new technology. The model must be changed. Technologies have to be given an opportunity to prove that they are efficient and more cost-effective than solutions now currently being employed.

[The prepared statement of Mr. Koons follows:]

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Senate testimony outline

Background –

C.I.Agent Solutions® is a Louisville, Kentucky based company. Our primary business is designing and building SPCC secondary containment systems for the electric utility industry utilizing polymer technology. C.I.Agent® is the principle component in our products. C.I.Agent is a proprietary blend of USDA food grade polymers which are non-toxic, non-corrosive, non-carcinogenic, and non-hazardous. They are typically used to manufacture plastic food ware and medical devices such as IV bags, syringes and surgical gloves.

C.I.Agent polymers have been listed as "solidifier" on the EPA NCP product schedule for the use on oil spills since 1994. C.I.Agent has been successfully used on oil spills under the direct supervision of both state and federal on scene coordinators from the USCG and EPA. We have nearly a decade of case studies validating the efficiency and cost effectiveness of C.I.Agent solidifiers.

C.I.Agent is capable of solidifying hydrocarbons such as (sheen – refined oils – diesel fuels - bio-fuels – vegetable & seed oils – crude oils – bunker c) upon contact turning the liquid hydrocarbon into a solid rubber-like mass that floats. The solidified hydrocarbon is bio-unavailable to any living organism. Fish, turtles, birds, manatees, and dolphins could swallow it thinking it was food and they could not metabolize it as it passed harmlessly through their digestive systems.

Hydrocarbons solidified with C.I.Agent are 100% recyclable – they can be used as fuel and as raw materials for asphalt.

C.I.Agent Solutions personnel have been regularly attending RRT meetings across the nation for the past eight years trying to get the regulatory community to examine, study, and recognize the effectiveness of using C.I.Agent solidifiers as an alternative method of oil spill clean-up. The case studies of actual spill clean-up events have proven without exception that C.I.Agent reduces the time of clean-up; the environmental impact; and the cost of clean-up on average 50% to 80%.

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To date C.I.Agent has been pre-approved for use on oil spills by a number of regional response teams (CRRT, RRT3, RRT4, AND RRT6) under (40CFR part 300 subpart J) of the national oil spill contingency plan. Each of these pre-approval documents is very limited in the scope of their use of solidifiers.

Under the guidelines set forth in these documents C.I.Agent Solutions has been engaged in an ongoing training program in the proper application and recovery of solidifiers. We have trained USCG MSO personnel in nearly every port from New York harbor to Miami and from Miami to Houston. The USCG is willing and prepared to use C.I.Agent. But until a spill is federalized they have to follow the "play book".

This brings me to the reason we believe that alternative technology is being shut out of the current BP deepwater horizon oil spill.

The reason does not lay with any single entity . . . Not with BP . . . Not with the USCG . . . Not the federal or state agencies currently working on the spill. In fact, every one of these groups are fully engaged and following their prescribed duties as forth in the national incident management system. The NIMS was created in 2003 in order to have a consistent nationwide template to follow in the event of a national crisis.

We have national response teams; regional response teams; area and local response teams all following their respective "play book". The groups have planned and trained for years. We have even had **SONS drills** "spills of national significance".

During these many years of training vendors have had very limited access and opportunity to bring new technology forward. Vendors are **not** permitted to attend the national response team meetings. Vendors are permitted to attend, observe and occasionally participate in the RRT meetings.

The system does not encourage or promote the active research of new technology. There is no prescribed avenue for vendor participation. It is simply not a priority.

Now that we have genuine "sons" event new technology stands on the sidelines while everyone dutiful follows an outdated play book.

The following are examples of new technology proffered by C.I.Agent Solutions over the past 40 days:

4/26/10 – BP requested C.I.Agent Solutions to come to Houma, LA to consult on shoreline protection.

4/31/10 – ADEM & BP contacted C.I.Agent Solutions to construct an oil-water separator on the north shore of Dauphin Island utilizing C.I.Agent polymer technology to protect the nesting habitat of marine birds.

5/12/10 - BP made a request to test C.I.Agent on the oil at the well head. The request was assigned to an "ARTES" alternative response tool evaluation committee. As of this date C.I.Agent Solutions has yet

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to be ask to participate in the "ARTES" process as required under the "ARTRES" protocols and even after numerous written request to the committee to join the process.

5/20/10 – C.I.Agent solutions brought in from our Australia group a marine engineer and a complete advanced system to apply and recover solidifiers. The "ARTES" committee was informed power points covering the equipments capabilities were sent for review.

The C.I.Agent water cannon and recovery system is currently being used in Australia on oil spills; to recover the oil and for vessel hull cleaning.

The current USCG directive for vessel hull cleaning in affect for the horizon deep water spill was written in 2003 and calls for the use of Corexit 9580. This is the same type of dispersant currently being challenged by EPA due its toxicity.

C.I.Agent Solutions offered at no charge 4 new water testing devices the C.I.Agent C.L.A.M. (continuous low level aquatic monitoring) currently used in California to several federal and state agencies responsible for water monitoring. The C.L.A.M. is capable of taking a 100 liter sample rather than the normal I liter sample and reads pollutants down to parts per billion rather than parts per million. It is capable of reading both oil and dispersant levels at the same time.

All agencies recognized the value of this advance technology but all refused to deploy the C.L.A.M. stating that they could not use because it was outside of the protocols.

The final road block prohibiting the use of new technology is the spill response industry. C.I.Agent has met with the chief executives of nearly every major spill response company in the nation trying to encourage the use of our products as part of their response capability. Without exception we have been told that they know our technology works, but they are not going to use it until someone makes them, because we sell labor.

2005 – Hurricane Katrina – C.I.Agent was brought to Bayou Le Batre by the USCG gulf strike team to clean up pockets of oil in the marshes. We were asked to leave the area by the OSRO (oil spill response organization) because our methods cleaned up the oil too fast.

2008 – Mississippi river barge/tanker spill – C.I.Agent was contacted in the pre-dawn hours by both the barge owner and USCG district 8 to come to New Orleans and bring our technology to clean up the sheen along the river walk. Standing outside the incident command center with the responsible party and USCG personnel the OSRO refused to use our technology stating that they were making too much money to use solidifiers.

2010 – C.I.Agent Solutions presented the option of using beach cleaning equipment to remove tar balls from the beach instead of using mass pools of labor. One machine is capable of replacing 300 laborers. The daily cost of the machine is $3400.00 – the daily cost of 300 labors is $13,500 per hour or $108,000 per 8 hour shift.

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The response industry has known of our technology as well as others for more than a decade and has consistently refused to apply it. As long as the response industry controls the response activities on the ground at these major spill events, new technologies and solutions will remain on the side lines. They are making billions of dollars putting bodies on the beach using outdated methodology. No one wants to stop or get off the gray train.

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case study 1

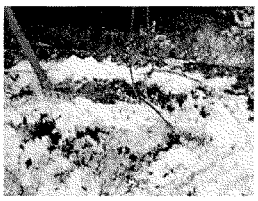
Manhole/Vault Oil and Sheen Removal

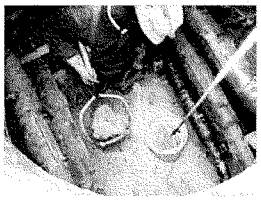
Mid-Atlantic Region - May 2007

C.I.Agent Solutions® was called to solve manhole/vault oil and sheen removal problems in the Mid-Atlantic region following the release of several gallons of oil into a manhole, with a second location containing sheen. This test was conducted as an alternative to using a vacuum truck to remove the oil contaminated water.

C.I.Agent® Granules were broadcast into the manhole onto the surface of the oily water. A pump was lowered into the vault and the water was pumped back into the vault, mixing the C.I.Agent® Granules with the oil to create a washing action to address the extreme contamination on the splices, cable racks, and wall areas. After allowing the solidified oil to settle on the surface, the water level was pumped down. The remaining solidified oil was removed from the vault; placed into bags for disposal and the remaining water was pumped out.

C.I.Agent® Products have become the standard operating procedure for oily-water removal. This procedure has proven to be an efficient and cost effective alternative to vacuum trucks; providing significant reduction in time and labor.





C.I.Agent® Costs Comparison

	C.I.Agent®	Vac truck (had they not used C.I.Agent®)
Clean-up Period:	2 hours, 6 man hours	
Materials:	70 lbs. of C.I.Agent® Granules Evac Filter	
Product Retrieved:	35 gals. of oil	
Waste:	approximately 290 lbs.	
Total Cost:	$1,770	$10,000 (estimate from customer)

Benefit Summary: Utility crew experienced over 80% operating cost reduction and substantial time savings in accessing customer electrical service problems.

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case study 2

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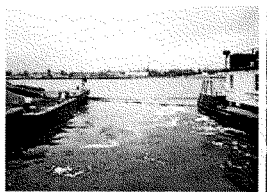
C.I.Agent® Pre-Approved
RRT IV, RRT III and Caribbean

C.I.Agent® oil solidifier has been pre-approved for use in loose form on open water in RRT III (Mid-eastern U.S.), RRT IV (Southeastern U.S.), and the CRRT (Caribbean).

This limited pre-authorization allows up to 1,000 pounds of C.I.Agent® to be used on spills of less than 500 gallons providing all conditions of the preauthorization are met.

All other RRT regions are in various stages of signature or approval.

Oil Spill - Ohio River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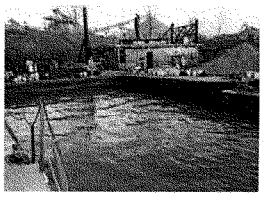
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C.I.Agent® Cost Comparison

	C.I.Agent®	Environmental Crew
Clean-up Period:	6 hours, 20 man hours	500 man hours
Materials:	962 lbs. of C.I.Agent® Granules 24-12"x12" pillows	5000 absorbent pads and 210 - 8" x 10' booms
Product Retrieved:	over 534 gals. of oil sludge	over 534 gals. of oil sludge
Waste:	approximately 2.5 tons of controllable waste	8 tons of waste
Total Cost:	$18,653	$100,000 +

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2a
case study

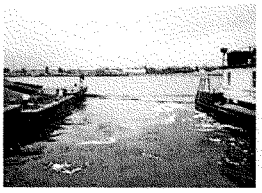
Ohio River Oil Spill

Louisville, KY - March 2003

A valve was left open on a slop tank used by tow boat and barge operators to pump used oil from tow boats and barges in Louisville, Kentucky. Over 1,000 gallons of heavy slop oil ran into the Ohio River. After deploying hard boom the spill was contained about equally in two separate sites each containing just over 500 gallons. The Federal On Scene Coordinator (FOSC) was from the Ohio Valley Sector, USCG.

Site A - The Responsible Party (RP) called in a response company to begin the clean up using traditional mechanical methods such as: boats, skimmers, vacuum trucks, re-frac tanks, polypropylene pillows, sheets, booms, and pads. They also had a crew of nearly a dozen men on hand.

Site B – With concurrence from the USCG, FOSC, and the RP, C.I.Agent Solutions® began to clean up the second site. C.I.Agent® Granules were applied in loose form to the surface on the spill. This process was repeated until the oil formed a solid rubber-like blanket on the surface of the spill. Without the aid of a boat, two men began to lift the solidified oil from the surface with swimming pool skimming nets and placed it into containers for disposal. The entire site was oil free after 20 man hours by using C.I.Agent® Polymer Technology.



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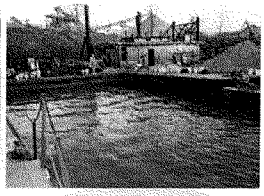

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C.I.Agent® Costs Comparison

	C.I.Agent®	Environmental Crew
Clean Up Period:	6 hours, 20 man hours	500 man hours
Materials:	962 lbs. of C.I.Agent® Granules	5000 absorbent pads 210 - 8" x 10' booms
Product Retrieved:	over 534 gals. of oil sludge	over 534 gals. of oil sludge
Waste:	approximately 2.5 tons of controllable waste	8 tons of waste
Total Cost:	$18,653	$100,000 + (estimate by contractor)

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case study 3

Newtown Creek Sheen Removal

Brooklyn, NY - December 2007

In 1978, the U.S. Coast Guard discovered 800,000 barrels of oil on the aquifer under Greenpoint, NY; the former site of oil refineries and storage terminals. To date, reclamation efforts have recovered approximately 400,000 barrels. During this period, oil has been leaching through the ground into the Newtown Creek creating sheen. The Site Manager had deployed a fixed hard boom along the site to keep the sheen out of the channel. The process used to recover the sheen required over 1,000 foot of five inch polypropylene boom to line the inside of the fixed hard boom. The polypropylene boom had to be removed, replaced, and disposed of every three weeks as it would begin to leach hydrocarbons back into the water.

In March 2007, the Site Manager, with the approval of NYDEP, placed four 25 foot C.I.Agent® Sheen Booms inside the hard boom perpendicular to the flow of the current. The C.I.Agent® Sheen Booms allowed the water to pass through while polishing the sheen. This enabled the Site Manager to immediately eliminate 500 feet of five inch polypropylene boom and the cost associated with changing it out 17 times a year.

In March 2008, the Site Manager placed five 25 foot C.I.Agent® Sheen Booms inside the fixed boom. The remaining 600 feet of five inch polypropylene boom was removed eliminating all cost associated with replacing, changing out, and disposing of the polypropylene booms.

C.I.Agent® Costs Comparison

C.I.Agent® Solutions		Traditional Solutions	
2007 4 - 25 ft. C.I.Agent® Sheen Booms	$1,600	**2007** 8,500 ft. 5 in. Polypropylene Boom	$25,500
2008 5 - 25 ft. C.I.Agent® Sheen Booms	$2,000	**2008** 18,700 ft. 5 in. Polypropylene Boom	$56,100
Combined material cost:	$3,600	**Combined material cost:**	$81,600

Two year savings using C.I.Agent® Sheen Booms was $78,000*.

***Savings does not include the cost of labor for 34 change-outs of the polypropylene booms and disposal costs associated with 27,200 ft. of five inch polypropylene boom.**

Rev. 1/08

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case study 4

U.S. Sugar - Diesel and Sheen Recovery

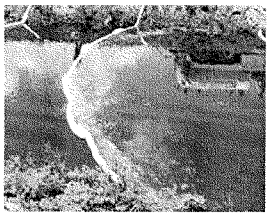
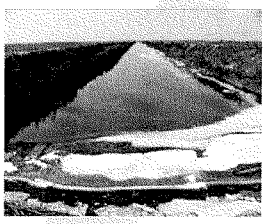
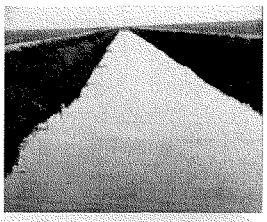
Clewiston, FL - April 2006

As a result of vandalism, diesel fuel was left spilling into a waterway. C.I.Agent® Quick Deployment Boom was placed between the irrigation pump wall and ACT Environmental Company boom material. Approximately 30 to 50 pounds of C.I.Agent® Granules were applied to an area of 100,000 square feet of sheen. Another five pounds of product was applied to several small pockets of diesel fuel trapped by a man-made containment device.

Sheen continued to come from the area around the intake of the pumping station. Diesel fuel had saturated parts of the ground where the hose from the 500 gallon storage tank had been vandalized.

Workers proceeded down the canal approximately one half mile to the area where most of the product remained. The product was contained by the retaining wall of the canal on three sides and ACT had a boom in place on the fourth side.

All waste was gathered and put into 55 drums: 3 drums of ACT five inch booms, one to two drums of weeds, debris, approximately 15 gallons of solidified diesel fuel, and C.I.Agent® materials. A 100 foot C.I.Agent® Quick Deployment Boom was placed to gather any remaining sheen.

C.I.Agent® Costs Comparison

	C.I.Agent®	Environmental Crew
Clean Up Period:	3 hours, 6 man hours	54+ man hours
Materials:	55 lbs. of C.I.Agent® Granules 2 - 100 ft. & 1 - 50 ft. C.I.Agent® Quick Deployment Booms	absorbent pads, booms & vac truck
Product Retrieved:	approximately 55 gals. diesel fuel	over 12,000 gals. of diesel fuel & water
Waste:	360 lbs. of controllable waste	6 tons of waste & debris
Total Cost:	$1,852	$24,959 (estimate)

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Juniper Beach Diesel Spill

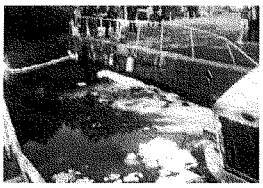
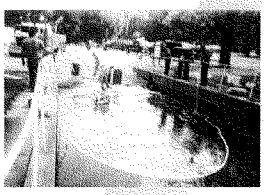
Louisville, KY - August 2007

A semi truck with failing brakes ran into the Juniper Beach boat ramp and ruptured a saddle tank. Approximately 40 gallons of diesel fuel was spilled.

An environmental company estimated clean up to take two days using booms, pads, and a vac truck.

First responders on-site were the Louisville Fire Department using C.I.Agent® for the first time.

C.I.Agent Solutions® personnel also responded by delivering product and assisting Chief Fredricks in containing and cleaning the spill. A boat and hard boom were deployed, but actually hindered the clean up. The vac truck was not needed.

C.I.Agent® Costs Comparison

	C.I.Agent®	**Environmental Crew** (had they not used C.I.Agent)
Clean Up Period:	3 hours, 6 man hours	estimated 2 days, 4 men
Materials:	30 lbs. of C.I.Agent®	pack of absorbent pads, 160 ft. of boom, 50 ft. hard boom, boat
Product Retrieved:	15 gals. of diesel fuel,	350 gals. of water and diesel fuel
Waste:	approximately 135 lbs. of controllable waste	10,800 lbs. of water 320 lbs. of waste
Total Cost:	$1,205	$20,000 (approximately) (verbal by contractor)

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McAlpine Dam Hydraulic Oil Spill

Louisville, KY

A broken pipe released approximately 45 gallons of hydraulic oil into the water at McAlpine Dam. The day before C.I.Agent Solutions® personnel arrived, three McAlpine employees had used a boat and a volume of absorbant pads that filled a 20-yard dumpster. In their words, "We didn't even dent the spill." The alternative was to lower a vac truck with a crane down the 80-foot wall to vacuum up the oil. The cost of this method was prohibitive.

C.I.Agent Solutions® had an appointment to demonstrate their product the following day; not being aware of the spill. After the demonstration, C.I.Agent Solutions'® people were shown the spill. They quickly got to work. Two men treated the spill with C.I.Agent® Granules, which solidified the oil on contact. Using a flat boat and pool skimmers, they were able to remove the solidified oil and sheen in 4.5 hours.

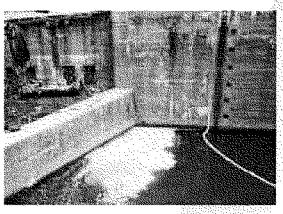
"Thank you for introducing me to C.I.Agent®. In my thirty years in professional safety I have never come across a product to remove oils/fuel from the water like it.

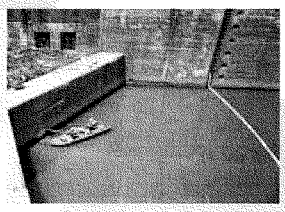
C.I.Agent® should be available on every waterway on the continent. You have a product that truly is environmentally friendly.

When we had the spill in the cofferdam area on the Ohio River, you put your words into actions. It does work as well as you said it does. C.I.Agent® greatly sped up the cleanup efforts of our crew making it extremely easy to remove and dispose of the oil.

I will be recommending it to everyone with the potential for waterway spills."

Thomas E. Tucker
Environmental Safety and Health Manager Washington Group International





C.I.Agent® Costs

Clean Up Period:	4.5 hours
Materials:	5 - 5 gal. pails of C.I.Agent® Granules
Product Retrieved:	35 gals. of hydraulic fuel
Waste:	6 - 5 gal. pails
Total Cost:	$1,465

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case study 7

Salvage Recovery - Submerged Power Vessel

Near Jacksonville, FL - June 2007

A 60-foot power boat was grounded on the beach near the channel north of Jacksonville. The vessel went down with fuel on board. During the recovery effort, the salvage crew deployed C.I.Agent® Sheen Boom inside the hard boom to capture the fuel and prevent sheen from escaping during recovery. Diesel fuel was observed leaking from the vessel, however, NO sheen was observed beyond the C.I.Agent® Sheen Boom. The sheen was completely captured in the C.I.Agent® Sheen Boom.

C.I.Agent® Costs

Clean Up Period:	4 days
Materials:	2 - 25 ft. C.I.Agent® Sheen Booms
Product Retrieved:	approximately 55 gals. of diesel fuel
Total Cost:	$3,825

Benefit Summary: The salvage crew was able to focus on the recovery effort, which shortened the recovery time because they did not have to perform any response effort to recover the leaking diesel fuel.

Additionally, the responsible party was only issued a warning rather than a fine because the fuel was contained and no sheen was observed beyond the recovery site.

Upon the completion of the vessel recovery, the C.I.Agent® Sheen Booms were removed. It was noted that the weight of the booms had dramatically increased. They, in fact, had nearly tripled their original weight. After drying they were cut open for an internal examination. It was clearly demonstrated that the C.I.Agent® Granules worked extremely well encapsulating and solidifying the spilled diesel fuel. Of equal importance to the Salvor was that the C.I.Agent® Sheen Booms did not leach diesel back into the water as they were being removed.

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case study 8

Salvage Recovery - Pleasure Craft

St. Petersburg, FL - August 2007

This 32 foot vessel was salvaged in St. Petersburg, FL in August 2007 by Bluewater Diver & Salvage Co. (BWD). On August 15th, at 21:00 hours, the owner of the vessel called and informed us that the vessel was sunk at the dock behind his residence. At 23:30 hours, I received a call from the owner informing me that the fire dept/HAZMAT team was on scene and that the USCG/MSO was underway. I put 40 feet of one inch C.I.Agent® Quick Deployment Boom in my small car, drove to the scene, stood on the vessel in my shorts and placed three 10 foot sections of boom tie wrapped together from end-to-end from the port and starboard mid-ship bow to make one long 30 foot continuous boom.

The fire department was satisfied and contacted MSO telling them that BWD was on scene and had used C.I.Agent® to contain the spill. The next morning I salvaged the vessel, collected the C.I.Agent® Boom, placed it back in the rubber tote, took it to my salvage yard, and let it dry out for later use. For some things we have VISA®... getting back to bed an hour and a half later to enjoy my night's sleep was priceless.

We all know that placing hard boom and oil absorbent pads in the water would have taken all night and a lot of time the next day. I would be hard pressed to say that I had a whole hour in the entire salvage process for oil containment and clean Up with C.I.Agent®.

Written by:
Pat Garrison
Bluewater Dive & Salvage

C.I.Agent® Costs Comparison

	C.I.Agent®	Environmental Crew
Clean Up Period:	1 man hour	8 man hours
Materials:	4 - 10 ft. C.I.Agent® Quick Deployment Booms	40 absorbent pads, 30 - 10 ft. booms
Product Retrieved:	gasoline sheen	sheen unrecoverable
Total Cost:	$167	$1,250

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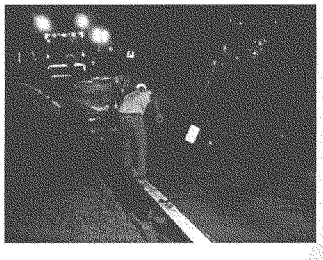
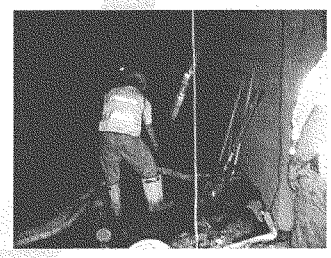
I-264 Overturned Truck - Diesel Fuel Removal

Louisville, KY - September 2007

A tractor trailer overturned on the overpass of I-264 and US-31W, spilling diesel fuel onto the roadway and into a large storm drain that leads to a stream flowing into the Ohio River. C.I.Agent® Granules were placed at the entrance of the drain to prevent any other fuel from entering the drain. C.I.Agent® Marine Booms were placed at several locations in the drain culvert. After the fuel was solidified on the surface, the local fire department used approximately 1,000 gallons of water to flush the diesel fuel from the drain. All diesel fuel was captured and solidified, and no water was processed.





C.I.Agent® Costs Comparison

	C.I.Agent®	Conventional Method (had they not used C.I.Agent®)
Clean Up period:	3 hours	
Materials:	70 lbs. of C.I.Agent® Granules 3 - 6 in. x 24 in. C.I.Agent® Marine Booms	
Product Retrieved:	40 gals.	
Waste:	320 lbs.	
Total Cost:	$4,685	$6,874 (estimate)

Benefit Summary: Responsible party experienced 50% reduction in clean-up cost by using C.I.Agent® instead of the conventional vacuum truck. Additional benefits of C.I.Agent®: Solidifies hydrocarbons by not having to process any water and works as containment to prevent any more fuel from entering the drain system.

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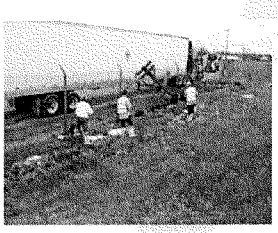
case study **10**

Truck Spill - Diesel

Jeffersonville, IN - April 07

C.I.Agent® was used to clean up diesel fuel from a tractor trailer that side-swiped a telephone pole and released approximately 40 gallons of fuel. It was raining and had been raining for a couple of days prior to the accident. The ground was extremely saturated with water, which allowed the diesel fuel to float. A C.I.Agent® Quick Deployment Boom was placed down gradient to protect the drain. C.I.Agent® was then applied to the floating diesel fuel. A pool skimmer was used to remove the solidified fuel. There was no water processed during this clean up.



C.I.Agent® Costs Comparison

	C.I.Agent®	Vac Truck (had they not used C.I.Agent®)
Clean Up Period:	4 hours	
Materials:	60 lbs. of C.I.Agent® Granules 1 - 25 ft. C.I.Agent® Quick Deployment Boom	
Product Retrieved:	40 gals. of oil	
Waste:	400 lbs.	
Total Cost:	$2,179	$4,225 (*estimate)

Benefit Summary: The client experienced 50% reduction in clean up costs by using C.I.Agent® products instead of using a vacuum truck. An added benefit of using C.I.Agent® is its ability to solidify the hydrocarbon without having to process any water. It also renders the material non-hazardous, which allows the C.I.Agent® solidified product to either be placed in a landfill, recycled into plastic products, or blended with asphalt.

*Estimates were calculated by a 13 year veteran of the spill response industry.

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Food Processing Plant Spill

Simpsonville, KY - December 2006

A food processing plant had a line rupture on one of their hydraulic processing packing machines. Approximately 15 gallons of hydraulic oil was released into the drain that leads to a two-acre retention pond at the rear of the property. A C.I.Agent® Quick Deployment Boom (QDB) was deployed at the pond's discharge for containment and to prevent the oily water from leaving the property and retention area. C.I.Agent® Granules were also applied in the front of the QDB to begin solidifying the hydraulic oil. Leaf blowers were utilized to push the floating oil to the containment area. Small pool skimmers were then used to remove the solidified material.

> *"Just wanted to thank you for your recommendation of the C.I.Agent®. Our company purchased the product to keep on hand in case of a spill. Within two weeks we had a significant spill and the C.I.Agent® was immediately applied and prevented major damage to our adjacent waterways, a possible fine and saved us approximately $5,000 from a conventional clean up. I would highly recommend your product again to others. Our company would be glad to discuss with anyone interested the advantages of using the C.I.Agent®."*

Tim Herndon
Assistant Plant Manager

C.I.Agent® Costs Comparison

	C.I.Agent®	**Vac truck** (had they not used C.I.Agent®)
Clean Up Period:	2 hours	
Materials:	35 lbs. of C.I.Agent® Granules 1 C.I.Agent® Quick Deployment Boom	
Product Retrieved:	15 gals. of machine oil/sheen	
Waste:	approximately 150 lbs.	
Total Cost:	$1,164	$3,907 (*estimate)

Benefit Summary: The client experienced 50% reduction in clean up costs using C.I.Agent® products instead of conventional vacuum truck, skimmers and polypropylene products. An added benefit of using C.I.Agent® is its ability to solidify the hydrocarbon without having to process any water. It also renders the material non-hazardous, which allows the C.I.Agent® solidified product to either be placed in a landfill, recycled into plastic products, or blended with asphalt.

*Estimates were calculated by a 13 year veteran of the spill response industry.

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12 case study

Diesel Fuel Removal From Retention Pond

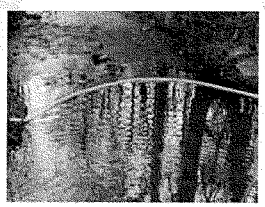
Shelbyville, KY – November 2007

A tractor trailer driving through a Wal-Mart parking lot in Shelbyville, Kentucky struck a light pole mounted in concrete rupturing the truck's fuel tank. Approximately 150 gallons of diesel fuel was released onto the parking lot and into a retention area that discharges into a large creek. Approximately four miles of creek was affected by this release.

C.I.Agent® Granules and C.I.Agent® Marine Booms were placed at the entrance and exit of the retention area. C.I.Agent® Quick Deployment Booms and C.I.Agent® Sheen Booms were placed at several locations in the creek. The last C.I.Agent® Sheen Boom was placed approximately four miles from the spill site. Once all booms were in place, the local fire department flowed about 1,000 gallons of water to flush the drains and float the diesel fuel into the awaiting booms.

Drain leading to creek.

First C.I.Agent® Sheen Boom.



Final C.I.Agent® Sheen Boom.

C.I.Agent® Costs Comparison

	C.I.Agent®	Conventional Method (had they not used C.I.Agent®)
Clean Up Period:	8 hours	
Materials:	40 lbs. of C.I.Agent® Granules 8 C.I.Agent® Marine Pillows 4 C.I.Agent® Sheen Booms 6 C.I.Agent® Quick Deployment Booms	
Product Retrieved:	150 gals. of diesel fuel	
Waste:	approximately 500 lbs. of diesel fuel	
Total Cost:	$11,272	$16,372 (estimate)

Benefit Summary: Client experienced $5,100 reduction in clean up by using C.I.Agent® Products instead of the conventional vacuum truck method. Additional benefits of C.I.Agent® is its ability to solidify the hydrocarbon without having to process any water. It also renders the material non-hazardous, which allows the C.I.Agent® solidified product to be placed in a landfill, recycled into plastic products, or blended with asphalt.

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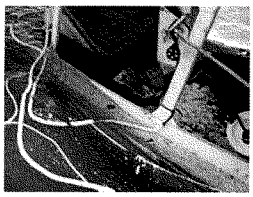
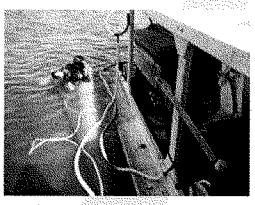
Commercial Fishing Vessel Salvage

Reddington Shores, FL – January 2008

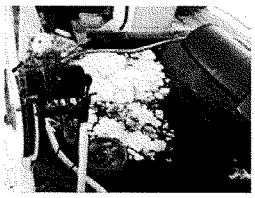
A 38 foot fishing vessel was sunk at the dock with three 55-gallon drums of diesel on its deck and 100 gallons in the tank. A visible sheen of engine oil and diesel was on the water when Bluewater Diver & Salvage (BWD) arrived on the scene. C.I.Agent® Quick Deployment Booms (QDB) were immediately deployed; a 25 foot QDB was positioned at the stern to contain the spill; a second 25 foot QDB was positioned to catch sheen that drifted toward the seawall. The USCG Marine Safety Officer (MSO) who arrived on the scene was familiar with C.I.Agent® and observed the salvage. After placing lifting bags under the vessel, one pound of C.I.Agent® Granules was sprinkled around and on top of the engine inside of the QDB containment area. As the vessel was being re-floated, a Department of Environmental Protection (DEP) officer arrived; he too was familiar with C.I.Agent® and stayed to observe the salvage. During the raising of the vessel the loose C.I.Agent® and solidified oil settled on the engine and into the bilge where it solidified the remaining oil and diesel. The boat owner's mechanic, who was working on the engine, scooped up the oil and diesel solidified with C.I.Agent® from the bilge then placed it into plastic bags for easy disposal in a landfill. The C.I.Agent® Booms were removed after capturing all of the sheen and placed into bags. They were then taken back to the BWD Salvage Yard where they were hung up to dry, awaiting use on a future spill response.



50 ft. C.I.Agent® QDB placed around the stern of the vessel.



Diver is setting an airbag to raise the vessel.



A C.I.Agent® QDB placed around the engine compartment and one pound of C.I.Agent® Granules dispersed inside the boom to solidify the motor oil.

C.I.Agent® Costs Comparison

	C.I.Agent®	Conventional Method (had they not used C.I.Agent®)
Clean Up Period:	1 hour	12 hours
Materials:	1 lb. C.I.Agent® Granules 75 ft. C.I.Agent® Quick Deployment Booms	50 ft. Hard Boom 50 ft. 4 in. Sausage Boom 100 18 in.x18 in. Oil Absorbent Pads Biohazard Containment Bags
Product Retrieved:	motor oil and diesel fuel (quantity too small to weigh)	unable to determine.
Waste:	N/A	used oil absorbent pads and sausage boom.
Total Cost:	$200.00	$2,000.00 (estimate)

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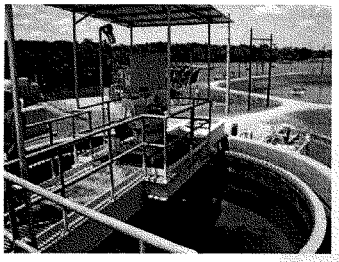
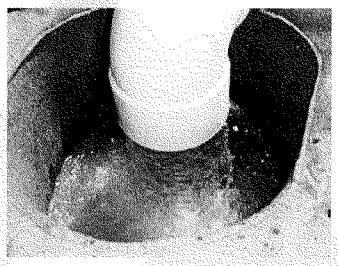
Oil Filtration From Cooling Tower

Alabama – May 2007

A pump located inside a cooling tower at a large power plant began leaking oil. After several days, over 100 gallons of oil from the pump contaminated the water inside the cooling tower. The plant manager did not realize the pump had a problem until several days later. By the time the problem was discovered, the oil was throughout the 550,000 gallon cooling tower.

C.I.Agent Solutions® was contacted by the plant manager for consultation and recommendations. C.I.Agent Solutions® delivered three custom-made C.I.Agent® Hydrocarbon Discharge Filters to remove the oil from the water and two 55 gallon drums of C.I.Agent® Granules. The process began by pumping the contaminated water from the main cooling tower to a tank clarifier outside the plant. The flow of water from the cooling tower to a tank clarifier was controlled by automated pumps. The contaminated water was then pumped through the C.I.Agent® Hydrocarbon Discharge Filters at approximately 60 gallons per minute. C.I.Agent® Granules were also added to the tank clarifier to assist in hydrocarbon removal. Samples were taken throughout the process to monitor the hydrocarbon levels. The results were impressive. The C.I.Agent® Hydrocarbon Discharge Filters reduced the hydrocarbon levels from 171.5 PPM incoming to less than 5 PPM outflow.





C.I.Agent® Costs Comparison

	C.I.Agent®	Treatment of Water at Waste Recovery Facility
Clean Up:	3,600 gals. per hour (approx.)	Unknown
Materials:	3 - C.I.Agent® Hydrocarbon Discharge Filters 2 - C.I.Agent® Granules 55 gal. drums	Multiple tanker trucks
Results:	Reduced PPM from 171.5 to less than 5 for water treated	Unknown
Total Cost:	$18,000.00	Between $250,000 & $500,000 (estimate)

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15
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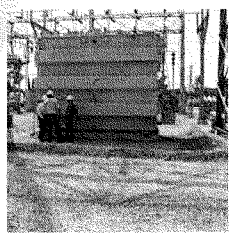
Secondary Containment: Dike Method of a Single Transformer

London, Ohio – November 2007

C.I.Agent Solutions® was asked to provide an SPCC solution with an 18 inch C.I.Agent® Barrier Boom to surround a 30 foot x 40 foot transformer slab. The customer wanted as small a footprint as possible to contain the entire amount of oil in the unit with additional freeboard to handle some precipitation.

It was calculated that the area necessary for total containment around the unit would need to be approximately 10 feet out from the transformer slab. A trench was dug into the six inch gravel base to reach the impervious clay subsurface. An 18 inch tall C.I.Agent® Barrier Boom was placed into the trench; six inches below the grade level and 12 inches above the grade level. The barrier boom was held in place with rebar. A bead of powder Bentonite was poured into the trench to form a seal around the edge of the barrier boom. Clean gravel was then placed on both sides of the barrier boom to hold it in a vertical position. The rebar was later removed.



Cost Comparison

	C.I.Agent®	Concrete or Composite Wall Had they not used C.I.Agent®
Equipment:	Trencher, shovels, rakes, rebar, hammer, front-loader	Variety of construction equipment
Materials:	150' x 18" C.I.Agent® Barrier Boom Fire-retardant, clean gravel (1-2")	Multiple materials
Oil Contained:	9,600 gallons	9,600 gallons
Man Hours:	12 man hours (3 men, 4 hours each)	Concrete - 28 days for curing Composit Wall - 2-3 days labor
Impact on Facility:	None	Possible shut down
Total Billing for Product & Labor	Below $8,500.00	$50,000+ for concrete w/sump, drain $45,000+ for composite wall w/sump, drain

Benefit Summary: By their own estimates, the Utility experienced approximately 75- to 85-percent cost reduction in time and labor savings.

Rev. 09

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Greenpoint Filtration System

Brooklyn, NY – March 2008

As a result of decades of leaks and spills at an oil refinery in the Greenpoint area of Brooklyn, NY, 800,000 barrels of oil were discovered on the aquifer in 1978. To date, approximately 400,000 barrels of oil have been recovered. On one of the reclamation sites, 8,000 gallons of oily water are treated per day and 50 gallons of oil are recovered.

In the final stage of the oily water treatment process, over 100 polypropylene pads were used per week to absorb the oil. A charcoal filter was also used and was being replaced every 60 days.

In March 2008, C.I.Agent® products were added to the process equipment. C.I.Agent® Agent-X filtration material and C.I.Agent® Bilge Bags were used to encapsulate hydrocarbons in the final stage. As a result of using C.I.Agent® products, the polypropylene pad change out went from daily to weekly. The charcoal filters are now being replaced every 90 days instead of every 60 days.

The projected cost savings of using C.I.Agent® products in this oily-water separator system is $12,500 per year.

C.I.Agent® Costs Comparison

	C.I.Agent®	Polypropylene
Materials:	2 - C.I.Agent® Agent-X pads (weekly) 2 - C.I.Agent® Bilge Bags (weekly) Charcoal Filter Media (every 90 days)	84-105 pads (weekly) Charcoal Filter Media (every 60 days)
Labor:	Once a week - pad change-out Every 90 days - charcoal	7 days a week - pad change-out Every 60 days - charcoal
Total Cost:	$22,500	$35,000

Benefit Summary: Replacing over 100 polypropylene pads with two (2) C.I.Agent® Agent-X pads and two (2) C.I.Agent® Bilge Bags, on a weekly basis, produced a projected annual savings of 36 percent in material and labor costs.

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17
case study

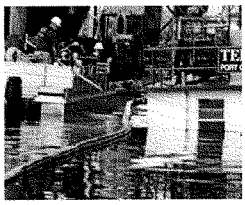
Shoreline Clean Up — No Problem

Henderson, Kentucky – September 2008

On September 14, a representative from IMI South Delta Division contacted the Coast Guard to report one of their tow boats sank during a storm and was leaking oil and diesel fuel into the Ohio River. An OSRO spill contractor was on the scene to install hard boom containment around the sunken vessel. IMI personnel submitted a salvage plan to the Coast Guard and upon its approval the salvage operation began. Due to the amount of debris on the water, the responsible party chose to look into the use of solidifiers for removal of the oil and diesel fuel.

C.I.Agent Solutions® was contacted the morning of September 16. A C.I.Agent Solutions® representative arrived on site to access the spill area and amount of solidifier, C.I.Agent®, needed. The first assessment determined only a small amount of diesel fuel and motor/slop oil had escaped; 10- to 15-gallons. But during the raising of the vessel, one of the cranes shifted and caused the tow boat to expell a large amount of motor/slop oil; approximately100+ gallons. C.I.Agent® Granules and Dissolvable Packs were applied by the OSRO contractor to begin solidifying the spill. Approximately 250 pounds of C.I.Agent® was applied before nightfall.

Clean up resumed the next morning by broadcasting C.I.Agent® Granules on debris along the shoreline. Using a two-inch trash pump with a fire hose attachment, the solidified oil was washed off the debris and shore line. The solidified oil was then removed from the water using swimming pool skimmers.



Cost Comparison

C.I.Agent® Product & Supervision Costs	
Equipment:	Command Center and Trailer
Materials:	320 lbs. C.I.Agent® Granules and Dissolvable Packs
Oil Contained:	160 gal. Diesel Fuel and Oil
Man Hours:	16 hrs. (1 man)
Impact on Facility:	2 days
Total Billing:	$6,566.22 (Billed to responsible party)

OSRO Costs	
Equipment:	2 Boats, 500 ft. Hard Boom, Vacuum Truck, 2 Response Trucks and ER Trailer
Materials:	Polypropylene Booms and Pads
Oil Contained:	Undetermined
Man Hours:	240 hrs. (4 men)
Impact on Facility:	5 days
Total Billing:	$50,539.30 (Billed to responsible party. Does not include C.I.Agent® products.)

Benefit Summary: If the responsible party would have performed their own clean up, their costs, including C.I.Agent® solidifier products and application supervision, their own labor and rental equipment, would have been less than $10,000. That's a $40,000 savings over the OSRO bill. Plus, clean up would have taken less than five days.

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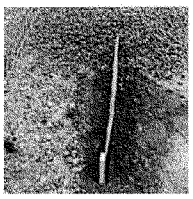
It's Worth Getting a Second Opinion

Ohio – May 2008

A consultant working on a secondary containment project for an Ohio Utility Cooperative substation requested a proposal from a reputable company that provided a layered composite system for secondary containment.

The quote came in at over $35,000 for materials, design and instructions on installation of materials. The quote, however, did not include contractor costs, labor or construction. Freight was FOB from a country bordering the United States.

The consultant then contacted C.I.Agent Solutions for a proposal on the same secondary containment project with the same specifications given to the first bidder. C.I.Agent Solutions came back with a design and quote of $4,725.60 using C.I.Agent Barrier Booms. This quote also did not include contractor costs or labor but the solution, i.e., C.I.Agent Barrier Booms, required no special equipment and could be installed in one day with minimal man power. Because of the simplicity of the Barrier Boom installation, the cooperative decided to use their own labor force to further reduce costs.



Cost Comparison

	C.I.Agent® Barrier Booms	Layered Composite System
Equipment:	Staple gun, small trench digger, hammer, shovels, rakes	Various construction equipment
Materials:	220 ft. of C.I.Agent® Barrier Boom 2 truck loads of fire-retardant clean gravel	Concrete, non-woven geotextile, woven geotextiles, impermeable liner, absorbent material, sand, oil mat, stone, dirt
System to Contain:	110% oil volume for 2,200 gals. oil and avg. 25 year rain fall event	110% oil volume for 2,200 gals. oil and avg. 25 year rain fall event
Man Hours:	9 hrs. - 3 men	Not specified
Impact on Facility:	0 day	Not specified
Total:	$4,725.60 (plus 9 man hours)	$35,166.00 (plus labor & construction)

Benefit Summary: As this contractor experienced first hand, there are good alternative methods to meet and exceed Federal Regulation requirements for secondary containment. Becoming complient does not have to cost a fortune or cause downtime for the facility. Whether the job calls for a retro-fit or a new substation install, C.I.Agent® Barrier Booms will usually cost 50-80% less than alternative methods; in this case the savings is 86.5%.

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Going Green and No More Fees for Pumping Bilges

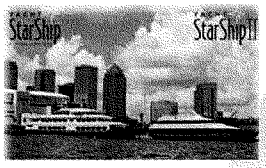
Tampa, FL – 2007/2008

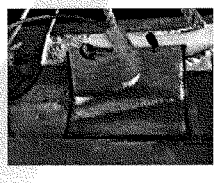
Yacht StarShip Dining Cruises, an environmentally conscience dinner cruise line operating in the Ports of Tampa and Boston, is going green. They suspended their monthly commercial bilge pumping program in February 2008 and have not paid to have bilge water pumped from their vessels since implementing the C.I.Agent® Bilge Maintenance Program.

By eliminating the twice a month visits of the diesel powered vacuum truck used to pump their bilges, Yacht StarShip Dining Cruises is reducing their carbon footprint while saving money.

The C.I.Agent® Bilge Maintenance Program is simple, efficient, and cost effective. It starts with cleaning the bilge and removing hydrocarbon pollutants (sheen, diesel, hydraulic gear and transmission oils) from the surface of the water. C.I.Agent® Granules, a hydrocarbon solidifier, are added to the oily water and agitated until all of the hydrocarbons have been encapsulated by the solidifier. The solidified hydrocarbons are removed from the surface with a swimming pool skimmer. The remaining water is pumped off of the vessel through a C.I.Agent® De-watering Bag, which collects loose granules and other particules.

Once the bilge has been cleaned, C.I.Agent® Bilge Pillows are deployed in the bilge to capture future hydrocarbons as the daily drips and drops occur; maintaining an oil free bilge. When the bilge water reaches a level requiring it to be pumped off the vessel, the C.I.Agent® De-watering Bag is used again. C.I.Agent® De-watering Bags can be re-used until the flow becomes restricted.





A hose transports the vessel's bilge water through a C.I.Agent® De-watering Bag, which captures the hydrocarbons and allows the cleaned water to flow through.

C.I.Agent® Cost Comparison

The volume of water being pumped is from wash down of voids consisting of engine room, bow thruster room, dry storage room as part of the vessel's routine monthly maintenance program and also the galley after daily cruises, not from leaks in the vessel.

C.I.Agent® Bilge Maintenance Program		Commercial Pumping Contractor
2/2008 to 11/2008 (9 months)		1/2007 to 2/2008 (13 months)
10,263 gallons		17,679 gallons
3 - C.I.Agent® De-watering Bags	= $ 571.40	$ 0.61 per gallon
1 - Pail C.I.Agent® Granules	= $ 206.20	
1 - Case C.I.Agent® Bilge Pillows	= $ 275.00	
	$1,052.60	**$10,784.19**
Average cost per month	**$ 116.96**	**$829.55 Average cost per month**

Benefit Summary: There are two additional vessels owned and operated by Yacht StarShip Dining Cruises also using the C.I.Agent® Bilge Maintenance Program and enjoying similar savings. Estimated annual savings per boat exceeds $8,500.00. Total annual savings of over $25,500.00.

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case study

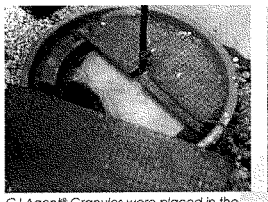
Ongoing Sheen Problem Solved Inexpensively

Milwaukee, WI – October 2008

A Milwaukee, Wisconsin substation had a containment system of 12 inches of stone and drain tile. A leak of about 20 gallons of oil occurred after maintenance on one of their transformers. The leak had made it through the stone and into the drain tile. The tile flows into a 1,000 gallon sump located at the substation. This sump has an automatic pump that pumps water out into a crock located about eight feet outside the substation. From the crock the water runs off their property and into the storm sewer. While most of the oil was cleaned up, there was a persistent sheen that kept occurring in the sump, which was the result of trapped oil/sheen in the drain tile.

Only clean water can be pumped out of the substation and into the storm sewer. The owners of the substation would call their local clean up contractor who usually charged them $1,500.00 to clean up the sheen plus 0.32/gal to containerize and dispose of the water. Typical costs using this method were between $1,800 and $2,100 depending on how much water was in the sump (max. capacity of sump = 1,000 gallons).

The owners of the substation chose to try C.I.Agent® Granules along with an EVAC Filter to clean up the water. The procedure consisted of disbursing C.I.Agent® Granules into the sump, agitating the water, scooping out the solidified sheen particles with a pool skimmer, and pumping the rest of the water through an EVAC Filter located outside the substation.



C.I.Agent® Granules were placed in the sump to solidify the sheen.

After removing the solidified sheen, the water is pumped outside the facility and through an EVAC filter.

Water sample from the EVAC Filter was lab tested and showed "non detect" for hydrocarbons.

C.I.Agent® Costs Comparison

	C.I.Agent®	**Conventional Method** (had they not used C.I.Agent®)
Clean Up Period:	30-40 minutes	2-3 hours
Materials:	5 gal. Pail C.I.Agent® Granules ($206) EVAC FILTER ($350)	Absorbent Pads
Retrieved:	Sheen	Water and Sheen
Total Cost:	**$556.00**	**$1,500 - $2,100**

Benefit Summary: The sheen is an ongoing occurrence at this substation. But, instead of paying a clean up contractor thousands of dollars for each occurrence, they can now use their own personnel and equipment. They have C.I.Agent® Granules left for several more applications and can reuse the EVAC Filter bringing their overall cost even lower the more they clean out the sump.

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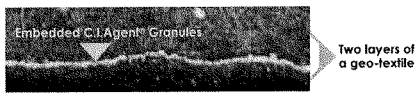
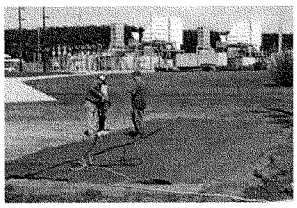
Versatile and Proven Oil Spill Clean Up Solutions

agent solutions®

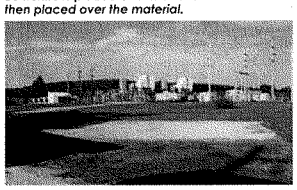
C.I.Agent® Agent-X



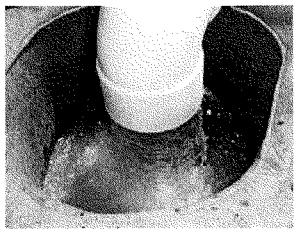


Land cleared and Agent-X is rolled out.

Bentonite is placed over the seams. Gravel is then placed over the material.



Simple, quick, and inexpensive protection.



Agent-X as a filtration media.

PRODUCT DESCRIPTION:

C.I.Agent® Agent-X is a new generation of smart textiles using embedded technology. Agent-X is made of two layers of a geo-textile with C.I.Agent® Polymers embedded between the layers. This hybrid creates a filtration fabric that encapsulates hydrocarbons and forces them to unsaturated areas of the fabric. Agent-X is hydrophobic, which allows water to pass through it, and is oleophilic to solidify hydrocarbons upon contact. Laboratory tests have shown great efficiency in removing small suspended oil droplets found in mechanical emulsions making it a stellar performer for oil sheen removal and for final polishing of effluent waters. Agent-X can be used for both land and water hydrocarbon filtration.

PRODUCT APPLICATIONS:

- Agent-X can be used as a component of a total containment project.
- Agent-X is excellent for use under equipment, change out storage areas, and for under mobile transformers to catch drips and drops.
- Agent-X is used as the back outside wall of C.I.Agent® Barrier Booms.

PRODUCT SPECIFICATIONS:

- Agent-X is embedded with 100-450 grams of a Co-polymer block blend (per square yard).
- The Agent-X material has a flow rate greater than 10 gallons per square foot per minute.
- Agent-X is able to remove 90% or greater of a 30,000 PPM hydrocarbon sheen contamination per 10 liters of water per square foot.

BENEFITS:

- Agent-X is a quick and cost effective solution for protecting hard surfaces and ground.
- Agent-X's characteristics of being able to wick and load drips and drops gives it its long lasting capabilities.
- Agent-X is rated for 200 years.
- Agent-X is UV rated.
- Agent-X is light-weight and easy to handle.
- Agent-X can be cut and trimmed in the field to specifications.

AVAILABILITY:

C.I.Agent® Agent-X is available in 54" x 50' rolls and by the square yard.

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Versatile and Proven Solutions for Secondary Containment Compliance

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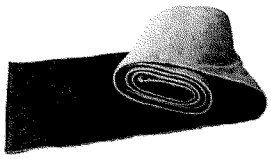
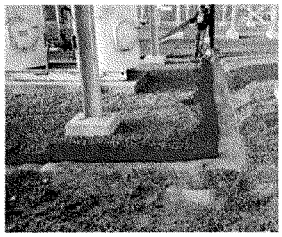
GSA Advantage!™
Contract #GS07F00781

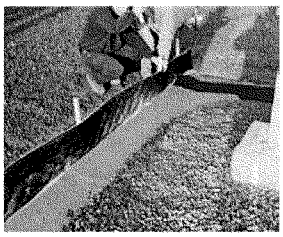
ENVIRONMENTALLY FRIENDLY agent solutions & RECYCLABLE PRODUCTS

C.I.Agent® Barrier Boom

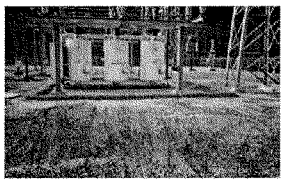




Liner Install



Boom with flap supported by stake



Clean stone cover

For additional information call C.I.Agent® Solutions.

BARRIER BOOM DESCRIPTION:

C.I.Agent® Barrier Boom is designed to prevent the flow of hydrocarbons from a containment site while allowing the unimpeded flow of water. The Barrier Boom is constructed from non-woven geo-textile material filled with C.I.Agent® Granules, a proprietary blend of USDA food-grade polymers, and backed with Agent-X, a non-woven geo-textile material with C.I.Agent® embedded within the fabric. C.I.Agent® Barrier Boom has become the accepted solution for SPCC secondary containment by professional engineers across the nation.

BARRIER BOOM APPLICATIONS:

C.I.Agent® Barrier Boom is the ideal solution for providing secondary containment as required by 40 CFR 112, SPCC. C.I.Agent® Barrier Boom has been installed and PE Certified more than 4,000 times over the last five years in substations for the electric utility industry. Other applications for secondary containment with C.I.Agent® Barrier Boom include pad-mounted transformers, oil-filled equipment storage areas, bulk fuel and oil storage areas — all without the use of concrete walls, sump pumps, and oil-water separator systems.

BARRIER BOOM PERFORMANCE SPECIFICATIONS:

- Hydrocarbon flow rate: 0 GPM (100% containment)
- Solidifies approximately a half gallon of oil per square foot depending on its viscosity.
- Service life of installed produce: Up to 200 years

BARRIER BOOM BENEFITS:

- Ease of installation: typically completed in one day.
- No special tools required.
- Equipment remains fully energized.
- No monitoring or maintenance required.
- Eliminates the need for concrete walls, sump pump systems, and oil-water separators.
- Reduces containment cost by 50% to 80% (on average).
- Can be disposed of in most landfills, eliminating the fees associated with hazardous waste disposal.

BARRIER BOOM AVAILABILITY:

C.I.Agent® Barrier Boom is manufactured to the specific requirements of the containment site. In most cases the C.I.Agent® Barrier Boom can be delivered within two weeks from date of the order.

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Versatile and Proven Solutions for Secondary Containment Compliance

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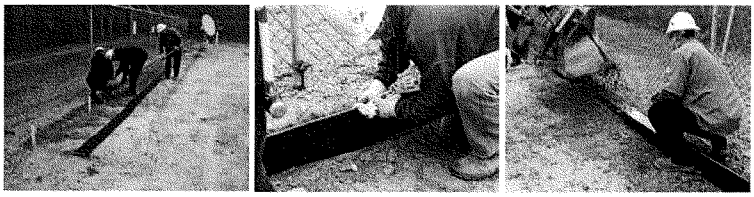
Above ground dike install for large facilities and equipment

Pad mount install for smaller containment



Substation install where subsurface is impervious

Water gate install to process water

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C.I.Agent Solutions® is proud to introduce the perfect solution to oil-free bilges. Now your boaters can enjoy their time on the water without worrying about oily bilgewater accidently being pumped off their boat and the fines that could be incurred.

C.I.Agent® Bilge Daddy and Jr. contain C.I.Agent®, a food-grade polymer that encapsulates hydrocarbons such as diesel fuel, gas, motor oil, hydraulic fluid, and sheen - *ESPECIALLY SHEEN!* Once captured in the Bilge Daddy or Jr. bag, the hydrocarbons will not leach out like in a sponge or polypropylene bags. Plus, C.I.Agent® is non-toxic, non-hazardous, non-corrossive, non-carcinogenic, and environmentally friendly. Since the hydrocarbons cannot escape from the bag, the bag can be disposed of as normal trash.

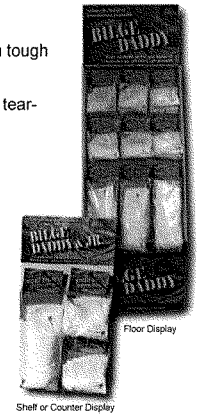
C.I.Agent® Bilge Daddy and Jr.;

- Are EASY TO USE
- Will pick-up sheen
- Will encapsulate gasoline, diesel, motor oil, hydraulic fluid, and other hydrocarbons
- Will not allow hydrocarbons to leach out, even when squeezed
- Can be disposed of as normal trash (check with your marina management or with local, state or federal regulations)
- Is listed on the EPA National Contingency Plan Product Schedule for use on oil spills in the waters of the U.S.*
- Is environmentally safe and will not harm aquatic plants, fowl, or fish
- Has unlimited shelf-life
- Works 24/7 in the bilge

Bilge Daddy is 12" x 12" and contains 8 oz. of C.I.Agent® oil-grabbing polymers in a tough tear-resistant bag. For 24' and larger boats.

Bilge Jr. is 6" x 6" and contains 1 oz. of C.I.Agent® oil-grabbing polymers in a tough tear-resistant bag. For boats under 24'

Also available: C.I.Agent® Bilge Daddy & Jr. floor and shelf/counter displays and pegboard graphics.



Floor Display

Shelf or Counter Display

Encourage good environmental practices by promoting the use of C.I.Agent® Bilge Daddy and Jr. for oily bilgewater.

ci agent solutions®

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*DISCLAIMER: C.I.Agent, also known as Cheap Insurance, is on the U.S. Environmental Protection Agency's NCP Product Schedule. This listing does not mean that the EPA approves, recommends, licenses, certifies, or authorizes the use of C.I.Agent on an oil discharge. This listing means only that data has been submitted to EPA as required by subpart J of the National Contingency Plan, 300.915.

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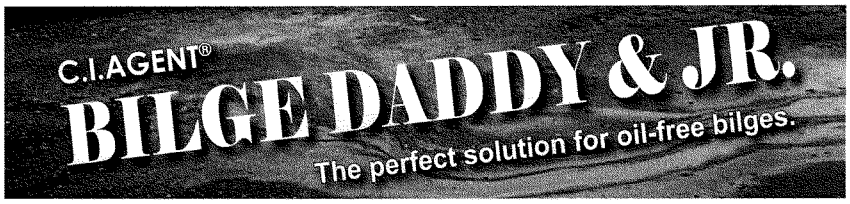

PRICE LIST and ORDER FORM

PRODUCT	DESCRIPTION	PACKAGED	PRICE	ORDER QUANTITY	ORDER EXTENSION
Shown with display graphics.	**C.I.Agent® BILGE DADDY** MP12-01 12" x 12" Bilge Daddy 8 oz. polymer Display graphics MP12-02 12" x 12" Bilge Daddy 8 oz. polymer No display graphics* *Packaging without the display graphics means that the Bilge Daddy is packaged in a sealed plastic bag with instructions inside - not the point-of-sale graphics that match the display and hang on a hook.	20/case 20/case	$399 $359	_____ _____	$ _____ $ _____
Shown with display graphics.	**C.I.Agent® BILGE JR.** MP6-01 6" x 6" Bilge Jr. 1 oz. polymer Display graphics MP6-02 6" x 6" Bilge Jr. 1 oz. polymer No display graphics* *Packaging without the display graphics means that the Bilge Jr. is packaged in a sealed plastic bag with instructions inside - not the point-of-sale graphics that match the display and hang on a hook.	50/case 50/case	$400 $300	_____ _____	$ _____ $ _____
Suggested display of products.	This attention grabbing corregated floor pegboard display is 20" wide by 13" deep by 60" high and comes with 15, 6" hooks. Can hold 36+ Bilge Jrs. or 18+ Bilge Daddys or a mixture of both. Easy to assemble. ***Free with the order of two cases of Bilge Daddy and/or Bilge Jr.***	1/carton	$60	_____	$ _____
Suggested display of products.	This attention grabbing corregated shelf or counter display is 12" wide by 9" deep by 22" high and comes with 8, 6" hooks. Can hold 12+ Bilge Jrs. or 6+ Bilge Daddys or a mixture of both. Easy to assemble. ***Free with the order of one case of Bilge Daddy and/or Bilge Jr.***	1/carton	$10	_____	$ _____
	12" wide x 5" tall graphic on foam board for use on pegboard display. ***Free with any order.***		Free	1	Free

Fax order and credit card information to 502-267-0181.

Ask about GSA pricing.

ci agent solutions®

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Louisville, KY 40299
866-242-4368
502-267-0101
F: 502-267-0181
www.ciagent.com

Purchaser's Name: _____
Company Name: _____
Address: _____
City: _____ St.: _____ Zip: _____
Ship To Address: _____
City: _____ St.: _____ Zip: _____
Phone No.: _____ E-mail: _____
Credit Card Type: VISA _____ MASTER CARD _____
Name on Card: _____
Card Number: _____
Security Code: _____ Expiration Date: _____
Signature: _____

Number of Items Ordered: _____

Sub Total: _____

Sales Tax*: (if applicable) _____

Total: _____

(plus shipping)

Credit card receipt will be mailed to "Ship To" address unless otherwise stated.

*If Sales Tax Exempt, please fax documentation.

Insert offset folio 48 here 73969.048

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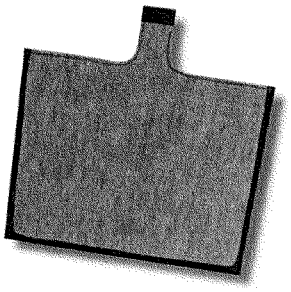
ENVIRONMENTALLY FRIENDLY ci agent solutions & RECYCLABLE PRODUCTS

C.I.Agent® Sheen Bag/De-watering Bag



Sheen Bag/De-watering Bag

PRODUCT DESCRIPTION:

The C.I.Agent® Sheen Bag/De-watering Bag is a device used to process water containing sheen from hydrocarbon contamination. The C.I.Agent® Sheen Bag/De-watering Bag is constructed with Agent-X, a non-woven geo-textile fabric embedded with C.I.Agent® Granules. Each bag also contains a C.I.Agent® Marine Boom to encapsulate and capture hydrocarbons as they move through the device.

PRODUCT APPLICATIONS:

The C.I.Agent® Sheen Bag/De-watering Bag is ideal in any situation that requires sheen to be removed from water. Situations include, but are not limited to, pumping contaminated water from elevator shafts, underground utility vaults and manholes, retention and secondary containment vessels, and out-fall on oil-water separators. Attach the C.I.Agent® Sheen Bag/De-watering Bag to the hose on the out-fall side of the pump and let the water flow through the device.

PERFORMANCE SPECIFICATIONS:

The actual flow rate for the C.I.Agent® Sheen Bag/De-watering Bag will vary according to the size of the device. The device will flow at approximately 20GPM per square foot of surface area. The flow rate will begin to slow as the C.I.Agent® Sheen Bag/De-watering Bag expends its surface area, encapsulating the hydrocarbons, and eventually will blind itself shutting off all flow.

BENEFITS:

- C.I.Agent® Sheen Bags/De-watering Bags are easy to use; they are an inexpensive, portable alternative to oil-water separators.
- C.I.Agent® Sheen Bags/De-watering Bags eliminate the use of vacuum trucks and expensive water processing fees.
- C.I.Agent® Sheen Bags/De-watering Bags can be re-used until the polymers have been expended.
- C.I.Agent® Sheen Bags/De-watering Bags will not drip or leach hydrocarbons.
- C.I.Agent® Sheen Bags/De-watering Bags can be disposed of in most landfills eliminating the "Cradle to Grave Liability" and the costs associated with hazardous waste disposal.*

*Always check with Local, State, and Federal Regulations prior to disposal.

AVAILABILITY:

The C.I.Agent® Sheen Bag/De-Watering Bag is available in standard sizes; 12"x12", 18"x24", 18"x36", and 18"x48". As with all C.I.Agent Solutions'® products, custom sizes are available upon customer request.

For additional information call C.I.Agent Solutions®.

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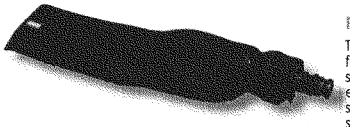
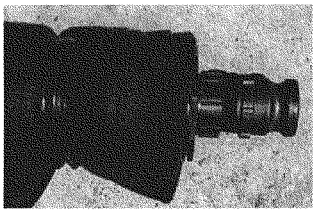
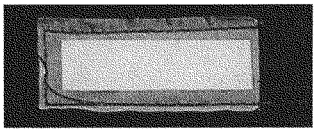
C.I.Agent® EVAC Filtration System



EVAC Filtration System filtering water.



Two-inch Camlock quick connect fitting.



Hydrocarbon Detection Strip placed against outer layer.

UN certified liquid-tight container.

* C.I.Agent® is listed on the EPA National Contingency Plan Product Schedule as a "Solidifier" for use on oil spills in the navigable waters of the United States.
**Always check with Local, State, and Federal Regulations prior to disposal.

PRODUCT DESCRIPTION:

The C.I.Agent® EVAC Filtration System uses state-of-the-art filtration technology to remove suspended solids and light sheen from water discharge operations in vaults, manholes, elevator shafts, bilges, tanks and more. Its unique four layer system adsorbs hydrocarbons, removes large and fine sediment, and polishes the water. The EVAC Filtration System comes with a two inch male Camlock quick connect fitting and is packaged in a UN certified liquid-tight container. The filtration bag is reusable.

PRODUCT APPLICATIONS:

The C.I.Agent® EVAC Filtration System is ideal for pumping contaminated water from elevator shafts, underground utility vaults and manholes, retention and secondary containment vessels, and out-fall on oil-water separators. Attach the C.I.Agent® EVAC Filtration System to the hose on the out-fall side of a centrifugal pump and let the water flow through the device.

PERFORMANCE SPECIFICATIONS:

- The EVAC Filtration Systems measures 12" by 57".
- The EVAC Filter measures 12" by 50"
- Flow Rate: 100+ GPM depending on the pump used. Flow rate diminishes as filter becomes laden with sediment.
- We suggest you use a centrifugal pump that generates around 10 PSI.
- Filter constructed of a non-woven geotextile that is lipophilic (adsorbs 10 times its weight in hydrocarbons), is hydrophobic, and exceeds MARV 97.7%
- A 6" by 6" C.I.Agent®* Hydrocarbon Solidifier Pillow captures sheen and light hydrocarbons.
- Has a 2-inch male Camlock quick connect fitting.
- Comes in a 6.5 gallon UN Certified pail with sure seal screw top lid.

BENEFITS:

- C.I.Agent® EVAC Filtration System is easy to use.
- C.I.Agent® EVAC Filtration System eliminates the use of vacuum trucks and expensive water processing fees.
- C.I.Agent® EVAC Filter can be re-used.
- C.I.Agent® EVAC Filtration System uses an Hydrocarbon Detection Strip to indicate when filter is nearing maximum hydrocarbon retention level.
- C.I.Agent® EVAC Filtration System can be disposed of in most landfills eliminating the "Cradle to Grave Liability" and the costs associated with hazardous waste disposal.**

AVAILABILITY:

Allow two-three weeks for delivery of standard unit (based on quantity ordered). As with all C.I.Agent Solutions® products, we would be happy to provide a quote for customization.

For additional information call C.I.Agent Solutions®.

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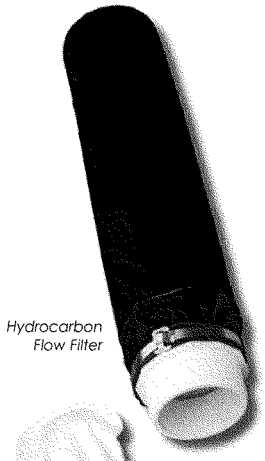
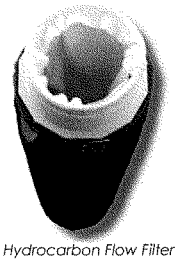
ENVIRONMENTALLY FRIENDLY ci agent solutions & RECYCLABLE PRODUCTS

C.I.Agent® Hydrocarbon Flow Filter



Hydrocarbon Flow Filter

Pre-Filter



Hydrocarbon Flow Filter with Pre-Filter

HYDROCARBON FLOW FILTER DESCRIPTION:

C.I.Agent® Hydrocarbon Flow Filter (HFF) is a device that removes hydrocarbons from water to a non-detectable level. The HFF is constructed from a non-woven geo-textile fabric in combination with C.I.Agent®, a proprietary blend of USDA food grade polymers. The C.I.Agent® Granules are capable of encapsulating and capturing all organic hydrocarbons (sheen, gasoline, diesel, and refined oils). The C.I.Agent® HFF allows water to flow through as it removes and captures hydrocarbons including most volatile organic compounds. Each C.I.Agent® HFF is designed for the site specific application.

HYDROCARBON FLOW FILTER APPLICATIONS:

The C.I.Agent® HFF can be used in any application that requires hydrocarbons to be removed from water. C.I.Agent® is currently being used in the following applications:

- Storm drain inserts
- Contaminated cooling tower water
- Electrical substations
- Retention pond out-flows
- Storm water run-off
- Oil-water separator out-falls
- Secondary containment vaults
- Bulk storage tank farms rain water out-falls

HYDROCARBON FLOW FILTER SPECIFICATIONS:

Each C.I.Agent® HFF is capable of processing water at the pre-determined rate specified by the customer and will remove all organic hydrocarbons from the water.

HYDROCARBON FLOW FILTER BENEFITS:

- Filters all organic hydrocarbons to <5ppm; most will be at non-detectable levels.
- Removes sheen, gasoline, diesel, refined oils, and volatile organic compounds.
- No maintenance required when used with a pre-filter to catch debris.
- Will not drip or leach out.
- Can be disposed of in most landfills; eliminating fees associated with disposal of waste.

HYDROCARBON FLOW FILTER AVAILABILITY:

C.I.Agent® Hydrocarbon Flow Filters are custom built to meet the required site specific application of the client. Determining factors include, but are not limited to, the amount of water to be processed and/or the flow rate required.

For additional information call C.I.Agent Solutions.

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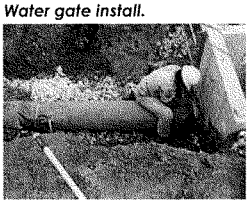
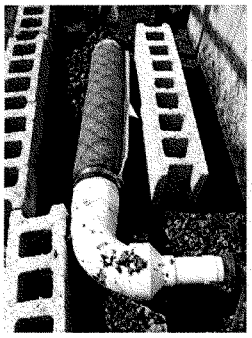
Water gate install.



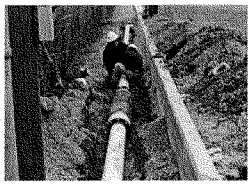
Wall mount install.

Wall mount install.

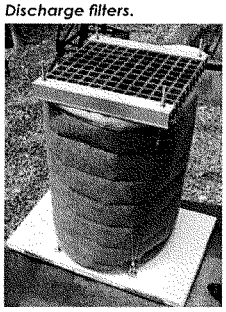
Pad mount install.



Storm water run-off.

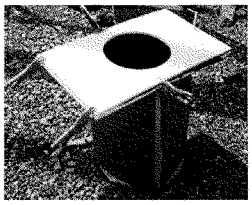


Discharge filters.



Catch basin drain filters.

Catch basin drain filters.



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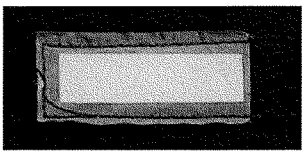
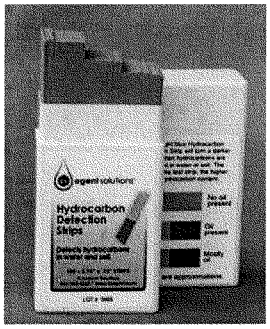
Hydrocarbon Detection Strips

The Hydrocarbon Detection Strip turns a darker blue when hydrocarbons are present.



The Hydrocarbon Detection Strip is used on the C.I.Agent EVAC Filtration System.



Hydrocarbon Detection Strips comes in a hard plastic container.

PRODUCT DESCRIPTION:

The Hydrocarbon Detection Strips can quickly and accurately determine the presence of hydrocarbons in water. When the Hydrocarbon Detection Strip is introduced into a potential hydrocarbon situation, the light blue strip will turn a darker blue if hydrocarbons are present. The color intensity and size of the darker blue areas are indicators of the quantity of hydrocarbons contained in the sample. If the sample contains no hydrocarbons, the strip will not moisten or discolor.

PRODUCT APPLICATIONS:

Hydrocarbon Detection Strips can be used to detect hydrocarbon contaminated water in elevator shafts, underground utility vaults and manholes, retention and secondary containment vessels, and out-fall on oil-water separators prior to pumping out the water. An Hydrocarbon Detection Strip is used on the C.I.Agent EVAC Filtration System to determine when the filter is nearing its maximum hydrocarbon retention level.

PERFORMANCE SPECIFICATIONS:

The sensitivity of the Hydrocarbon Detection Strip is dependent upon the solubility of the hydrocarbons. By moving the strip back and forth a few times at the surface of the water, the following values can be detected:

Example of Hydrocarbons	Lower Limit PPM of Water	Clearly Detectable PPM of Water
Petroleum Ether (B.P. 40-80C)	250 PPM	400 PPM
Gasoline (High Octane)	10 PPM	25 PPM
Heating Oil	5 PPM	10 PPM
Lubricating Oil	1 PPM	5 PPM

When testing volatile substances, the color reaction must be evaluated immediately due to rapid fading.

BENEFITS:

- The Hydrocarbon Detection Strip measures 2.75" x .75" and comes 100 in a hard plastic container.
- The Hydrocarbon Detection Strips can detect the presence of hydrocarbons in water prior to pumping thus eliminating potential fines.

For additional information contact C.I.Agent Solutions®.

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Manufactured by Macherey-Nagel GmbH & Co. KG, Düren, Germany

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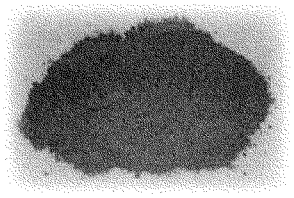
Versatile and Proven Oil Spill Clean Up Solutions

Kleen-N-Dry - Premium Oil Absorbent and Bioremediation



PRODUCT DESCRIPTION:

Kleen-N-Dry is an oil absorbent and remediation product that uses nature's methods and materials to control and remediate hydrocarbons . Kleen-N-Dry contains all the natural ingredients necessary to accelerate the indigenous microbes to a point where they will rapidly degradate unwanted hydrocarbons. Kleen-N-Dry picks up hydrocarbons from soil or solid surfaces and is harmless to plant and animal life. It is extremely efficient on land spills where a residual dressing on the ground will encapsulate a spill and not allow the spill to leach back into the soil. Kleen-N-Dry is non-abrasive, non-carcinogenic, non-toxic, and is not harmful to the environment.

PRODUCT APPLICATIONS:

Kleen-N-Dry can be used in applications that require hydrocarbons to be removed from soil or solid surfaces. It is excellent for fuel, oil, paint, coolant, and other spills on roadways and shop floors. Kleen-N-Dry can also be used to bioremediate oil-soaked ground in areas such as tank storage facilities, fueling locations, oil production sites, pipelines, etc.

PERFORMANCE SPECIFICATIONS:

Kleen-N-Dry meets all OSHA requirements and is biodegradable. It is not WHMIS regulated. Kleen-N-Dry can be incinerated and will contribute 7,000 BTU's per pound with less than 3 percent ash. It may be placed into landfills, or non-hazardous oil field waste landfarms. The nature of the hydrocarbon absorbed determines the appropriate disposal method. Effective temperatures range from 40°F to 120°F (5°C to 50°C).

BENEFITS:

- 100% ALL NATURAL biocatalyst.
- Non-abrasive, non-toxic, non-carcinogenic, and is not harmful to the environment.
- Absorbs up to six times its weight in oil or oil-based products.
- Cleans ground by accelerating bioremediation.
- Stops leaching of spills into the soil or groundwater.
- Lightweight for ease of handling and storage.

AVAILABILITY:

Kleen-N-Dry is available in 30 lb. bags or by the pallet (60, 30 lb. bags).

For additional information contact C.I.Agent Solutions®.

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Liquids That Can Be Absorbed By Kleen 'N' Dry

Compounds which may be bioremediated with Kleen-N-Dry are in red.

Acetone
Acetonitrile
Amylacetate
Benzene
Butanol
2-Butanone
Bromodichloromethane
Bromoform
Bunker C
Canola Oil
Carbon Disulfide
Carbon Tetrachloride
Chloroform
Chloromethane
Chlorobenzene
Corn Oil
Cutting Oils
Cyclohexane
Dichloromethane
Dichlorobenzene
1, 2,-Dichloroethane
Diesel Fuels
Ethanol
Ethylbenzene
Ethyl Ether
Ethylene Glycol
Gasoline
Heptane
Hexane
Hexachlorobenzene
Hexene
Isobutanol
Isoprene
Jet Fuels
Kerosene
Methanol
MethyleneChloride
MethylethylKetone
Methylphenol
Motor Oil
Napthalene
2-Nitroanaline
Nitrobenzene
Oil Base Paints
Oil Base Fluids
Oil Base Ink
Paraffin Oil
Pentane
Pentachlorophenol
Phenol
Propanol
Scintillation Liquid
Silicon Oils
Styrene
Tetrachloroethane
Tetrachloroethyene
Tetrahydrofuran
Toluene
Trichloroethylene
Trichlorophenol
Varsol
Vinyl Acetate
Vinyl Chloride
Xylenes

This is a partial list. Additional liquids can be verified upon request.

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Versatile and Proven Oil Spill Clean Up Solutions

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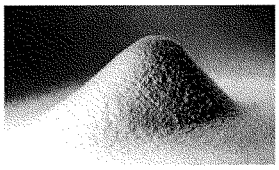
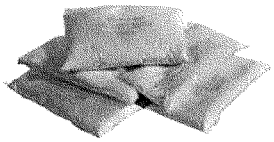
ENVIRONMENTALLY FRIENDLY & RECYCLABLE PRODUCTS

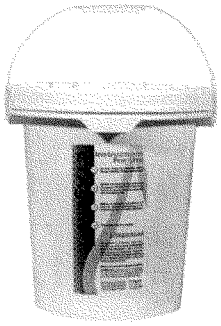
C.I.Agent® Granules/Dissolvable Film Packs



C.I.Agent® Loose Granules



C.I.Agent® Dissolvable Film Packs



C.I.Agent® 5 Gallon Pail

For additional information contact C.I.Agent® Solutions.

C.I.AGENT® DESCRIPTION:

C.I.Agent® is a proprietary blend of USDA food grade polymers that is non-toxic, non-corrosive, non-carcinogenic, and non-hazardous. C.I.Agent® is listed on the EPA National Contingency Plan Product Schedule as a "Solidifier" for use on oil spills in the navigable waters of the United States.* C.I.Agent® polymers have a long chain molecular structure that is highly cross-linking with organic liquid hydrocarbons, enabling C.I.Agent® to solidify liquid hydrocarbons (sheen, gasoline, diesel, and oils, including crudes) upon contact into an inert solid rubber-like mass that floats.

C.I.AGENT® APPLICATIONS:

C.I.Agent® can be used in loose granule form, dissolvable film packs, pillows, booms, and hydrocarbon flow filters. C.I.Agent® can be effectively used for both spill prevention and clean up. As a spill prevention tool, C.I.Agent® has become the engineered solution for the electric utility industry for SPCC secondary containment and for oil contamination removal in underground vaults and manholes. C.I.Agent® Hydrocarbon Flow Filters, storm drain inserts, and sheen bags can remove hydrocarbons from water to levels below 5ppm without impeding the flow of water. C.I.Agent® can solidify and remove liquid hydrocarbons (sheen, gasoline, diesel, and oils, including crudes) from both fresh and salt water without processing any water.

C.I.AGENT® PERFORMANCE SPECIFICATIONS:

Solidification rate by weight; 4 parts contaminant to 1 part C.I.Agent® Granules; indefinite shelf life.

C.I.AGENT® BENEFITS:

- Solidifies all organic hydrocarbons.
- Works in both fresh and salt water.
- Has no temperature limitations; extreme heat and cold.
- No expensive mechanical equipment required for recovery.
- Cannot sink.
- Renders hydrocarbons into a non-hazardous inert solid rubber-like mass.
- Can be disposed of in most landfills, eliminating the "Cradle to Grave Liability" and fees associated with hazardous waste disposal.**
- Can be 100% recycled as raw material for asphalt, rubber and plastic production, or can be burned as fuel.

C.I.AGENT® AVAILABILITY:

C.I.Agent® is available in loose granule form and in dissolvable film packs in standard quantities packaged by weight: 10 lb., 50 lb., 100 lb., 200 lb., 400 lb., and 800 lb. units. Granules are available in 30 gal., 55 gal., and 95 gal. over packs. C.I.Agent® dissolvable film packs are available in 4 oz., 8 oz., and 16 oz. packets.

* DISCLAIMER: C.I.Agent®, also known as Cheap Insurance, is on the U.S. Environmental Protection Agency's NCP Product Schedule. This listing does not mean that the EPA approves, recommends, licenses, certifies or authorizes the use of C.I.Agent® on an oil discharge. This listing means only that data has been submitted to EPA as required by subpart J of the National Contingency Plan, 300.915.
**Always check with Local, State, and Federal Regulations prior to disposal.

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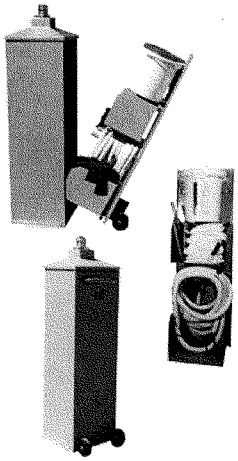
C.I.Agent® Marina Spill Response Systems

C.I.Agent® Marina Dock Box



C.I.Agent® Marina Spill Pedestal

PRODUCT DESCRIPTION:

C.I.Agent® Marina Spill Response Systems are designed to contain and recover hydrocarbon spills on water in marinas. Each C.I.Agent® Marina Spill Response System contains a Quick Deployment Boom, Bilge Bags, and C.I.Agent® Dissolvable Film Packs.

PRODUCT APPLICATIONS:

Marina applications include the refueling dock area and strategic placement throughout the marina to guard against oily-bilge water releases and mystery spills.

BENEFITS:

- No maintenance required on either the Dock Box or the Spill Pedestal.
- Quick Deployment Boom is reusable.
- All C.I.Agent® products will solidify sheen, gasoline, diesel, and oils including crude.
- No special tools required for recovery.
- C.I.Agent® has been pre-approved for use by Federal Regional Response Teams.*
- C.I.Agent® products will not drip or leach out and can be disposed of in most landfills; eliminating fees associated with disposal of hazardous waste.**

AVAILABILITY:

The C.I.Agent® Marina Spill Response Systems are available in two distinct containers; the C.I.Agent® Marina Dock Box and the C.I.Agent® Marina Spill Pedestal.

The C.I.Agent® Marina Dock Box is constructed of impact-resistant polyethylene resin designed specifically for marine environments with stainless steel hardware.
Dimensions: approx. 48.25" long x 28" wide x 30" high

The C.I.Agent® Marina Spill Pedestal is constructed of powder coated aluminum with stainless steel fittings and wheels for mobility.
Dimensions: approx. 18" long x 18" wide x 5'11" tall.

For additional information contact C.I.Agent® Solutions.

* DISCLAIMER: C.I.Agent®, also known as Cheap Insurance, is on the U.S. Environmental Protection Agency's NCP Product Schedule. This listing does not mean that the EPA approves, recommends, licenses, certifies, or authorizes the use of C.I.Agent® on an oil discharge. This listing means only that data has been submitted to EPA as required by subpart J of the National Contingency Plan, 300.915.

**Always check with Local, State, and Federal Regulations prior to disposal.

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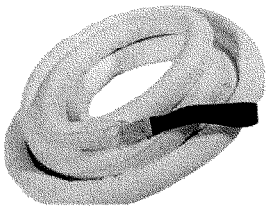
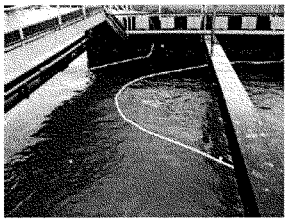
C.I.Agent® Marine Boom



C.I. Agent® Marine Boom



C.I. Agent® Marine Booms used for polishing sheen after out-fall at utility power plant.

MARINE BOOM DESCRIPTION:

C.I.Agent® Marine Boom is a spill containment device for hydrocarbon spills in waters that may have currents, as well as calm waters such as harbors, streams, rivers, and tidal areas. The C.I.Agent® Marine Boom is approximately 3" in diameter and is filled with a proprietary blend of polymers that contain larger granules to increase the solidification rate throughout the boom. The larger C.I.Agent® Granules also increase the efficiency of the boom with heavier oils while maintaining the ability to polish sheen.

MARINE BOOM APPLICATIONS:

C.I.Agent® Marine Boom is ideal for use in harbor areas or in marinas where there are fuel docks and where currents or tides are present. The C.I.Agent® Marine Boom can be placed in scuppers to prevent hydrocarbon run-off from the decks of commercial vessels and in engine rooms or bilges to remove oil without the need to process any water. This device can also be used on land applications to prevent hydrocarbons from entering storm drains.

MARINE BOOM SPECIFICATIONS:

The outer skin is made of white (or black) spun-bound mesh and filled with C.I.Agent® Granules. The Marine Boom is capable of containing over 300 gallons of diesel fuel.

MARINE BOOM BENEFITS:

- C.I.Agent® Marine Boom is reusable until the loose polymers inside become solid.
- Hydrocarbons will not drip or leach out.
- C.I.Agent® Marine Booms can be disposed of in most landfills eliminating the "Cradle to Grave Liability" and the costs associated with hazardous waste disposal.*

MARINE BOOM AVAILABILITY:

C.I.Agent® Marine Booms are available in 5 ft. and 10 ft. lengths. As with all C.I.Agent Solutions™® products, custom sizes are available for specified applications upon customer request.

*Always check with Local, State, and Federal Regulations prior to disposal.

For additional information call C.I.Agent® Solutions.

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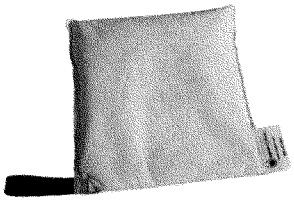
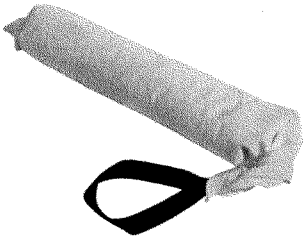
C.I.Agent® Marine Pillow and Boom



C.I.Agent® Marine Pillow



C.I.Agent® Bilge/Marine Boom

*Always check with Local, State, and Federal Regulations prior to disposal.

MARINE PILLOW AND BOOM DESCRIPTION:

The C.I.Agent® Marine Pillow and Boom are devices that are placed into the bilge of a vessel to capture and solidify hydrocarbons located in the bilge water. As the C.I.Agent® Marine Pillow or Boom floats and moves around the bilge compartment, the oil and fuel are captured and separated from the water. This process can be repeated until the bilge water is oil free.

C.I.Agent® Marine Pillow and Boom can be placed into the trash for easy disposal unlike polypropylene sheets, pillows, and booms that must be disposed of as special waste.* The C.I.Agent® Marine Pillow and Boom can keep bilges free of hydrocarbons and prevent citations and fines levied by the USCG during onboard inspections.

MARINE PILLOW AND BOOM APPLICATIONS:

C.I.Agent® Marine Pillow and Boom are ideal for cleaning oily-water in both recreational and commercial vessels. They are an effective preventive maintenance tool to keep bilges free of oily-water. Other applications for these devices include any container where oily-water is present such as oil-water separators, retention or containment structures, and utility vaults or manholes.

MARINE PILLOW AND BOOM BENEFITS:

- Will polish sheen.
- Will solidify gasoline, diesel, and all refined oils.
- Will not drip or leach out hydrocarbons; can be disposed of in most landfills eliminating the "Cradle to Grave Liability" and the fees associated with hazardous waste disposal.*
- Unlimited shelf-life.
- Not affected by heat or cold.

MARINE PILLOW AND BOOM AVAILABILITY:

C.I.Agent® Marine Pillow, which measures 12" x 12", is available by the case or as part of the C.I.Agent® Spill Response System.

ER12P-A 15 - 12"x12"/case with fast acting formula
ER12P-B 15 - 12"x12"/case with medium acting formula

Call us to determine which formula you need.

C.I.Agent® Bilge/Marine Booms are available by the case or as part of the C.I.Agent® Spill Response System.

MB312 20 - 3"x12" Bilge Booms/case with loop
MB320 15 - 3"x20" Bilge Booms/case with loop
MB324 10 - 3"x24" Bilge Booms/case with loop
MB336 6 - 3"x36" Bilge Booms/case with loop

For additional information call C.I.Agent® Solutions.

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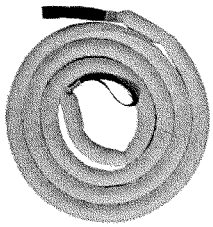
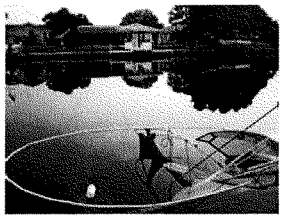
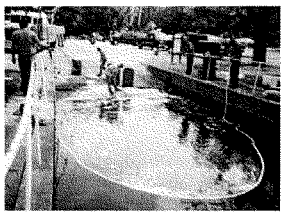
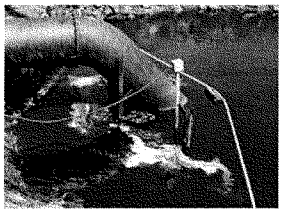
C.I.Agent® Quick Deployment Boom









PRODUCT DESCRIPTION:

C.I.Agent® Quick Deployment Boom (QDB) is a spill containment device for hydrocarbon spills on both land and water. The 1.75 in. QDB is filled with C.I.Agent®*, a proprietary blend of USDA food grade polymers, which encapsulate and solidify hydrocarbons upon contact.

PRODUCT APPLICATIONS:

As a spill containment device, C.I.Agent® QDB is ideal for spills in calm waters such as marinas, harbors, and retention ponds. The QDB is capable of capturing sheen by simply dragging it across the water. On land spills, the QDB is an excellent tool to protect storm drains from fuel spills that result from auto accidents and for sheen removal from monitoring wells for underground storage tanks.

PERFORMANCE SPECIFICATIONS:

The outer skin is made of white (or black) spun-bound mesh and filled with C.I.Agent® Granules. The QDB is capable of containing over 300 gallons of diesel fuel. Because of its light-weight and flexibility, one person can deploy the QDB unassisted.

BENEFITS:

- C.I.Agent® polishes sheen and is reusable until the loose polymers inside become solid.
- Simply rinse the QDB and hang it up to dry.
- C.I.Agent® QDB will not drip or leach hydrocarbons.
- The C.I.Agent® QDB can be disposed of in most landfills.**
- Eliminates the "Cradle to Grave Liability" and the costs associated with hazardous waste disposal.

AVAILABILITY:

C.I.Agent® QDB is available in standard lengths of 12, 25, 50, and 100 ft. As with all C.I.Agent Solutions™® products, custom sizes are available upon customer request.

* C.I.Agent® is listed on the EPA National Contingency Plan Product Schedule as a "Solidifier" for use on oil spills in the navigable waters of the United States.
**Always check with Local, State, and Federal Regulations prior to disposal.

For additional information call C.I.Agent® Solutions.

C.I.Agent®, also known as Cheap Insurance, is on the U.S. Environmental Protection Agency's NCP Product Schedule. This listing does not mean that the EPA approves, recommends, licenses, certifies or authorizes the use of C.I.Agent® on an oil discharge. This listing means only that data has been submitted to EPA as required by subpart J of the National Contingency Plan 300.915.

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C.I.Agent® Rapid Response System

PRODUCT DESCRIPTION:

C.I.Agent® Rapid Response Systems are easy-to-use and easy-to-store packages containing a variety of spill response materials and equipment specifically designed to meet your hazmat needs. ***C.I.Agent® is listed on EPA's National Contingency Plan Product Schedule.***

ER-HM95

Response System 95 — For Spills Up To Approximately 60 Gallons

1	MSC332	95 gal. D.O.T. Approved Over Pack (yellow)
1	POLY601-05	100 lbs. C.I.Agent® Granules for spills up to 60 gal. depending on viscosity of the hydrocarbon
1	QDB100	1" x 100' C.I.Agent® Quick Deployment Boom
12	MP12	12" x 12" C.I.Agent® Pillows with loop
2	MSC122	Pair of chemical resistant gloves
4	Bags	Disposal bags - suitable for landfill
1	Scoop	Large application scoop

ER-HM55

Response System 55 — For Spills Up To Approximately 30 Gallons

1	MSC333	55 gal. D.O.T. Approved Over Pack (yellow)
1	POLY601-05	50 lbs. C.I.Agent® Granules for spills up to 30 gal. depending on viscosity of the hydrocarbon
1	QDB50	1" x 50' C.I.Agent® Quick Deployment Boom
6	MP12	12" x 12" C.I.Agent® Pillows with loop
2	MSC122	Pair of chemical resistant gloves
3	Bags	Disposal bags - suitable for landfill
1	Scoop	Large application scoop

ER-HM30

Response System 30 — For Spills Up To Approximately 15 Gallons

1	MSC335	30 gal. D.O.T. Approved Over Pack (yellow)
1	POLY 601-05	25 lbs. C.I.Agent® Granules for spills up to 15 gal. depending on viscosity of the hydrocarbon
1	QDB25	1" x 25' C.I.Agent® Quick Deployment Boom
4	MP12	12" x 12" C.I.Agent® Pillows with loop
2	MSC122	Pair of chemical resistant gloves
2	Bags	Disposal bags - suitable for landfill
1	Scoop	Small application scoop

ER-HM5

Portable Response Hazmat System

1	CI-004	5 gal. pail
1	Poly601-05	10 lbs. C.I.Agent® Granules
1	QDB012	1" x 12' C.I.Agent® Quick Deployment Boom
1	MP12	12" x 12" C.I.Agent® Pillow with loop
1	MSC122	Pair of chemical resistant gloves
1	Bag	Disposal bag - suitable for landfill
1	Scoop	Small application scoop

C.I.Agent® Rapid Response Systems can be customized to fit your needs. Contact C.I.Agent Solutions® for pricing.

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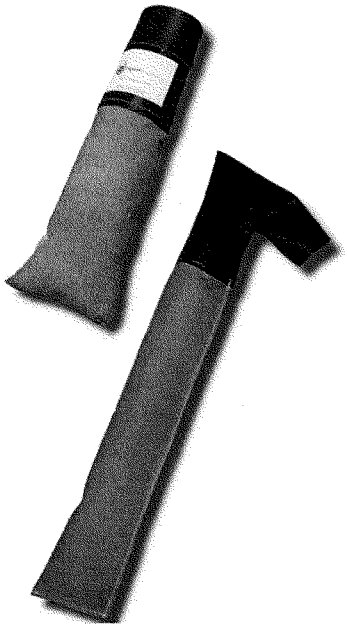
C.I.Agent® Scupper Filtration Solution



C.I.Agent® Scupper Filters are custom made for both vertical and horizontal drains of any type of vessel.

C.I.AGENT® SCUPPER FILTERS:

C.I.Agent® Scupper Filters are used in the scupper drain to prevent petroleum contaminated waters (deck runoff) from entering the waters of the United States pursuant to Federal Statues 33CFR Parts 155-157, CWA Section 311 and 40CFR 110.3. C.I.Agent® Scupper Filters incorporate an unique proprietary blend of USDA food-grade polymers (C.I.Agent®) that allow water to flow freely from the decks while capturing and preventing hydrocarbons from being released into the environment. In the event of a significant hydrocarbon release, the C.I.Agent® Scupper Filter will shut off all flow from the deck preventing an accidental hydrocarbon release into the environment. C.I.Agent® is listed on the EPA National Contingency Plan Product Schedule as a "Solidifier" for use on oil spills in the navigable waters of the United States.*

SCUPPER FILTER APPLICATIONS:

C.I.Agent® Scupper Filters are custom made for both "vertical" and "horizontal" drains to meet the drainage filtration needs of any type vessel, i.e., cruise ships, barges, tugboats, Coast Guard Cutters, pleasure and recreational craft, and more.

SCUPPER FILTER PERFORMANCE SPECIFICATIONS:

Flow rates are dependant upon the Scupper Filter size and the application.

SCUPPER FILTER BENEFITS:

- Will polish sheen
- Will solidify gasoline, diesel, and all refined oils
- Will not drip or leach out hydrocarbons; can be disposed of in most landfills eliminating the "Cradle to Grave Liability" and the fees associated with hazardous waste disposal.**
- Eliminates pumping into bilges and frees up waste water storage space
- Maintenance free; just replace when water stops flowing
- Unlimited shelf-life
- Not affected by heat or cold
- PVC Screen is ultraviolet tolerant
- Effective in both fresh and salt water
- Totally recyclable

SCUPPER FILTER AVAILABILITY:

Our Scupper Filtration Solutions are just that, a solution for a particular deck drainage problem. The C.I.Agent Solutions' R&D department would welcome the challenge to solve your scupper filtration dilemma. Just give us a call.

For additional information call C.I.Agent Solutions®.

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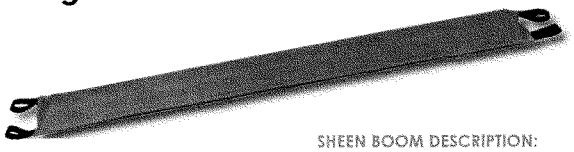
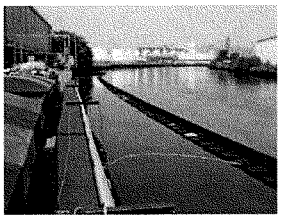
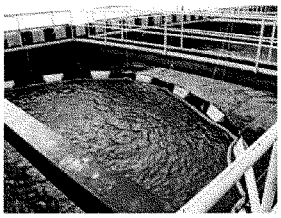
C.I.Agent® Sheen Boom





Newtown Creek, Brooklyn, New York

Polypropylene Boom to be replaced at Newtown Creek.



First Sheen Boom deployed in the out-fall of a major power plant.

SHEEN BOOM DESCRIPTION:

C.I.Agent® Sheen Boom is a device especially designed to collect sheen and hydrocarbons from the surface of water where there are issues with currents and/or wind. The Sheen Boom is constructed from a special high tensile screen that allows hydrocarbons to enter into the boom and be solidified by a proprietary blend of large and small polymers. The C.I.Agent® Sheen Boom will not allow the hydrocarbons to leach out of the back side of the boom like polypropylene booms.

The C.I.Agent® Sheen Boom is reusable until it becomes solid; simply rinse dirt and debris from the surface and redeploy as needed.

SHEEN BOOM APPLICATIONS:

C.I.Agent® Sheen Boom is ideal to keep sheen from leaving retention ponds and entering spillways or storm drains. The boom can be placed across or around water intakes as well as out-falls; and at fueling docks on waterways where there is current.

SHEEN BOOM SPECIFICATIONS:

A PVC coated screen with great tensile strength. Dusting is part of the solution. After wetting, the dusting will stop.

SHEEN BOOM BENEFITS:

- Long lasting.
- Cleanable.
- Could last up to several years.
- Recyclable.
- Reusable.

SHEEN BOOM AVAILABILITY:

C.I.Agent® Sheen Booms come in 3" diameter and 5, 10, 15, 20, and 25 ft. lengths. Strapping is placed per customer's request. A nylon rope can be run through the center.

For additional information contact C.I.Agent® Solutions.

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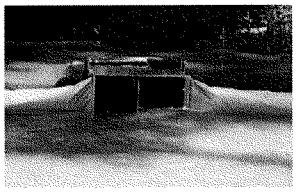
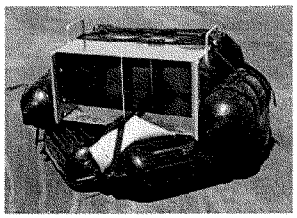
C.I.Agent® Sheen Machine

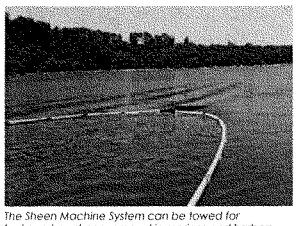


Booms are secured to both sides of the creek to direct the flow of sheen into the Sheen Machine Collector.



The Sheen Machine is light-weight, easy to carry, and can be stored in response vehicles.

The Sheen Machine System is ideal for remote locations where access is difficult.



The Sheen Machine System can be towed for hydrocarbon sheen removal in marinas and harbors.

SHEEN MACHINE DESCRIPTION:

C.I.Agent® Sheen Machine is a self-contained system ideal for capturing hydrocarbon sheen in remote areas with limited access such as creeks, streams, and outfalls; in rough terrain, no need to cut access roads. This durable, light-weight, and portable system can also be used in marinas and harbors to capture and remove hydrocarbon sheen before it impacts the environment.

Two 12" containment booms guide the sheen to the mouth of the C.I.Agent® Sheen Machine. The Collector directs the flow of water with the hydrocarbon sheen into the Collection Bag where the sheen is captured as the water flows through. The system can be reused until the Collection Bag ceases to flow. The spent Collection Bag can be disposed of as non-hazardous waste since the hydrocarbons cannot leach out. A new Collection Bag can then be easily attached.

SHEEN MACHINE SPECIFICATIONS:

- Collector measures 24" wide by12" high by 16" long, weighs 34 lbs., and is made of marine grade aluminum.
- Handles on the Collector makes it easy to maneuver.
- Six, eight-inch diameter floats support the Collector and Bag.
- Two yellow 10 ft. long by 12" high oil containment booms attach to the aluminum Collector by universal slide connectors.
- Nylon straps connect the Collector to the Collection Bag.
- Collection Bag measures 24" wide by 12" high by 60" long, weighs 23 lbs., and is constructed of black polyvinyl with C.I.Agent® Agent-X panels on the bottom and back.
- The Collection Bag contains one 6 ft. C.I.Agent® Quick Deployment Boom and four C.I.Agent® 12" x 12" Marine Pillows to encapsulate the hydrocarbon sheen.

SHEEN MACHINE BENEFITS:

- Captures and removes hydrocarbon sheen from water without processing any of the water.
- Portable and easily hand-carried to any spill site.
- System rolls up and is secured with nylon straps for convenient storage in response vehicles.
- Self-contained and requires no support equipment.
- Can be towed behind a vessel in lakes and harbors to quickly restore marine traffic faster after a spill.
- Collection Bag is reusable until the flow is restricted.
- Replacement Collection Bags are available.

For additional information call C.I.Agent Solutions®.

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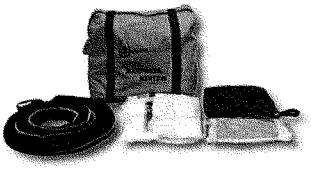
ENVIRONMENTALLY FRIENDLY & RECYCLABLE PRODUCTS

C.I.Agent® Spill Response Bags



Standard C.I.Agent® Spill Response Bag contains:

12'x1"	*C.I.Agent® Quick Deployment Boom*
10 lbs.	*C.I.Agent® Granules in 1/2 lb. dissolvable pouches*
12"x12"	*C.I.Agent® Bilge Bag*
	Garbage Bag
	Heavy-duty Gloves

C.I.Agent® Spill Response Bag comes in Safety Glow Orange or Lime Glow Green.

For additional information contact C.I.Agent® Solutions.

PRODUCT DESCRIPTION:

The C.I.Agent® Spill Response Bag is designed as a "Rapid Spill Response System" for hydrocarbon spills on both land and water. The Spill Response Bag contains several different C.I.Agent® polymer devices — a C.I.Agent® Quick Deployment Boom, C.I.Agent® Granules, and C.I.Agent® Bilge Bags — all for immediate deployment on spills. *The Spill Response Bag can be custom designed to meet the specific needs of any application.*

PRODUCT APPLICATIONS:

C.I.Agent® Spill Response Bags are excellent for industrial and marine applications. The small size of the Spill Response Bag allows it to be tucked behind seats of utility, response and service trucks, and in storage areas on pleasure boats and small commercial vessels. Marina operators can use the Spill Response Bags at fueling stations to contain spills and clean up sheens, gasoline, diesel fuel, and other hydrocarbon spills.

PERFORMANCE SPECIFICATIONS:

The C.I.Agent® Spill Response Bag measures 17" wide by 20" tall by 8" deep.
Immediate response capabilities for both hydrocarbon spill containment and clean up.
Solidification rate by weight: 1 part C.I.Agent® Granules to 4 parts contaminant.
The Solidification rate for the C.I.Agent® Bilge Bag is 1 to 8 by weight depending on the application.
A 100' C.I.Agent® Quick Deployment Boom is capable of containing over 300 gals. of diesel fuel.

BENEFITS:

- Fits easily into small storage compartments on boats and behind seats of response vehicles and service trucks.
- Booms are reusable; will not drip or leach out.
- Can be disposed of in most land fills eliminating the "Cradle to Grave Liability" and the cost associated with hazardous waste disposal.*

AVAILABILITY:

The C.I.Agent® Spill Response Bag is available in two colors: Safety Glow Orange and Lime Glow Green. Bags can be customized with C.I.Agent® products to meet the specific needs of the client.

*Always check with Local, State, and Federal Regulations prior to disposal.

11760 Commonwealth Dr. • Louisville, KY 40299 office 502.267.0101 toll free 866.242.4368 fax 502.267.0181 web www.ciagent.com Rev. 9/09

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Chair LANDRIEU. Thank you.
Ms. Baird.

STATEMENT OF HEATHER E. BAIRD, VICE PRESIDENT, CORPORATE COMMUNICATIONS, MICROSORB ENVIRONMENTAL PRODUCTS, INC.

Ms. BAIRD. Good morning. My name is Heather Baird, and I am the Vice President of Corporate Communications for MicroSorb Environmental Products of Norwell, Massachusetts. I would like to thank the Committee for allowing me today to testify.

My company has a microbial technology—a powerful consortium of oil-eating microbes. Our microbes have been proven successful many times beginning when the tanker Mega Borg exploded in the Gulf of Mexico in 1990 off the coast of Texas. BP has utilized our microbes in 2001 to remediate oil contamination in Lake Michigan. Further, we just concluded a scalable lab test conducted through an independent third party demonstrating that within 24 hours, our microbes were able to destroy over 90 percent of the crude oil in a Gulf of Mexico water sample which was taken from the vicinity of Grand Isle, Louisiana, in late May 2001. Today our microbes are still not being utilized to save the Gulf Coast despite being highly efficacious, proven successful, non-toxic and non-pathogenic.

First I would like to give you a little bit of background. Wherever there is a natural oil seepage from the earth, nature has placed oil-degrading microbes. These microbes use the oil as a food source, breaking it down into water, carbon dioxide, and fatty acids, rendering the substance harmless.

While nature is able to clean up after itself, it takes a lot of time, and the problem is mankind now puts far more hydrocarbon pollution into the environment than nature can remove in the amount of time that man wants to allow. Science has devised ways of speeding up nature, and it is from this advancement that our company was born. MicroSorb Microbes are also known by our formulation name: The Oppenheimer Formula—named after the pioneer in bioaugmentation, Dr. Carl Oppenheimer. It is a proprietary blend of nature's most powerful oil-eating microbes, harvested from some of the most extreme and oil-prone environments around the globe. With over 100 billion microbes per gram, our formula ensures rapid remediation. And since our microbes are cultivated on Texas sweet crude oil and Gulf of Mexico seawater as their food source, they are ideally suited for the Deepwater Horizon spill. Additionally, some of our microbes are aerobic and some are anaerobic. This means that they can function in oxygen-rich areas as well as oxygen-depleted zones. These microbes work in open water, as well as in sensitive areas such as marshlands, wetlands, and beaches. Application is simple. It is highly cost effective, especially when compared against absorbents and skimmers and boom technologies. And once applied, there is no excavation required, no costly disposal, nothing to pick up and nothing left behind. Once the oil runs out, the microbes die, returning either to natural concentration levels or safely consumed by other aquatic organisms.

Our formula is on the EPA National Contingency Product Plan Schedule. It was the first microbial formulation to be listed and has been listed since 1991. This fact, combined with the proven success

of this product, clearly makes it a smart addition to this cleanup solution. However, understanding who makes the decision to deploy has been a significant challenge to our firm.

Our President, Bill Baird, an engineer by trade, has been on the Gulf Coast for many weeks now, meeting with elected officials from Plaquemines Parish all the way to the Florida Keys. I have watched as he has tirelessly dispensed free advice to officials from city planners to Governors. And to give you an idea, we have met on scene with incident command in Florida; Mobile, Alabama; Governors' offices; the EPA; the DEP from Florida, Mississippi, and Louisiana; mayors' offices in four different states; the Coast Guard; the Department of Homeland Security; and city officials too numerous to count.

I personally have been on Capitol Hill meeting with Senators and their teams from the affected states, and it is important for the Committee to understand we have put all other business on hold chasing down all of these stakeholders at our own expense. We have gained alignment from each of these parties, who we believed were the decisionmakers, since they are the true stakeholders.

At each one of these touch points, we were told that our product is needed and should be deployed. However, these encouraging statements are quickly followed up with the caveat that BP holds the checkbook. Then we are inevitably told that we will be "passed along" to someone's contact or a committee within the BP system, and then we wait. As recently as this week, we were told to sign up on the Deepwater Horizon website, which naturally we have done. The American public believes that the Government is making these decisions, but our experience has been very different. The decisionmaker to us is clear; without BP sign-off, we remain sidelined. But how do you break through to BP amidst the millions of proposals, with a website being the only means of contact?

So why is BP not employing bioaugmentation as part of its arsenal to clean the spill? According to EPA Publication 640/k-93/002: "The United States is the world leader in field implementation of bioremediation, an attractive alternative to conventional methods of cleaning up persistent hazardous wastes in the environment." This was published in 1994. This has not been our experience with regards to this crisis.

We believe one reason why is the EPA states that bioaugmentation now is typically used as a polishing step, and that bioaugmentation solutions have been classified as alternative technologies, used only after all the oil has been reclaimed.

We have found that Japan has done the most comprehensive scientific research to date on the use of bioaugmentation in open water, and I respectfully refer the Committee to the studies submitted as evidence detailing how bioaugmentation is superior to natural attenuation. Naturally, time constraints do not allow me to explain in detail their methodology. However, I can tell you that remediation with our formula has been superior. There are additional studies that have been done over the last decade that——

Chair LANDRIEU. Twenty seconds, please.

Ms. BAIRD. Thank you.

So what can we conclude from this? We can conclude without question that the resources currently deployed for the battle are in-

sufficient to the task at hand. However, the necessary technology does, in fact, exist. It is ready. It is scalable. It is highly efficacious, and it has been proven over and over again. I hope this Committee can help businesses like MicroSorb determine constructive paths forward with the appropriate stakeholders represented.

Thank you for your time.

[The prepared statement of Ms. Baird follows:]

Congressional Testimony of Heather E. Baird,
Vice President, Corporate Communications ~ MicroSorb Environmental Products, Inc.
United States Senate ~ June 17, 2010

My name is Heather Baird and I am the Vice President of Corporate Communications for MicroSorb Environmental Products, Inc., of Norwell, Massachusetts. I would like to thank the committee for allowing me the opportunity to testify today. My company has a microbial technology – a powerful consortium of oil-eating microbes. Our microbes have been proven successful many times beginning when the tanker Mega Borg exploded in the Gulf of Mexico in 1990 off the coast of Texas. BP utilized our microbes in 2001 to remediate oil contamination in Lake Michigan. Further, we just concluded a scalable lab test conducted through an independent third party demonstrating that within 24 hours, our microbes destroyed over 90% of the crude oil in a Gulf of Mexico water sample. That sample was taken from the vicinity of Grand Isle, LA in late May 2010. Today, our microbes are not being utilized to save the Gulf Coast despite being highly efficacious, proven successful, non-toxic and non-pathogenic.

During the course of this testimony, I will briefly explain our microbial technology and will take you through the vast maze of decision makers with whom we have corresponded. I also hope to accurately convey the frustration we have felt over the last 59 days with regards to finding the elusive decision makers following Deepwater Horizon spill. As we lose more time trying to understand who makes the decisions, our fragile coastline loses more of its natural resources.

First, I would like to give you some background on the nature of hydrocarbon spills. Wherever there is natural oil seepage from the earth, nature has placed oil degrading microorganisms (microbes). These microbes use the oil as a food source, breaking it down into water, carbon dioxide and fatty acids, rendering the substance harmless, even beneficial.

While nature is able to clean up after itself, it takes time. The problem is that mankind now puts far more hydrocarbon pollution into the environment than nature can remove in the amount of time that man wants to allow. Science has devised ways of speeding up nature, and it is from this advancement that our company was born. MicroSorb® Microbes are also known by our formula name: The Oppenheimer Formula, (named after the pioneer in bioaugmentation, Dr. Carl Oppenheimer). It is a proprietary blend of nature's most powerful oil eating microbes, harvested from some of the most extreme and oil prone environments around the globe. With over one hundred billion microbes per gram, our formula ensures rapid remediation. Since our microbes are cultivated on Texas sweet crude oil and Gulf of Mexico seawater as a food source, they are ideally suited for the Deepwater Horizon spill. Additionally, some of our microbes are aerobic and some are anaerobic, meaning they can function in oxygen rich areas as well as oxygen depleted. These microbes work in open water, as well as sensitive areas such as marshlands, wetlands and beaches. Application is simple and highly cost effective when compared against absorbents, skimmers and boom technologies. Once applied, there is no excavation required, no costly disposal, nothing to pick-up or leave behind. Once the oil runs out, they will either die, return to former natural concentration levels, or will be safely consumed by other aquatic organisms.

Our formula is on the EPA National Contingency Product Plan Schedule (the first microbial formulation to be listed) and has been since 1991. This fact, combined with the proven success of this product, clearly makes it a smart addition to the Gulf cleanup solution. However, understanding who makes the decision to deploy has been a significant challenge.

Our president, Bill Baird, an engineer by trade, has been on the Gulf coast for many weeks now, meeting with elected officials from Plaquemines Parish to the Florida Keys. I have watched as he has tirelessly dispensed free advice to officials from city planners to governors. I mistakenly believed that with this powerful yet natural consortium of oil eating microbes plus the experience with how to deploy them, that exposure to decision makers was going to be our only challenge. The reality has been much different. Simply put, we were not clear on who is really making the decisions, and I am not sure that any business small or large knows how best to be heard.

To give the committee a sample, and this is by no means a comprehensive list, we have met on scene with:

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Incident Command in Florida and in Mobile, Alabama, Governors offices, the EPA, the DEP from Florida, Mississippi & Louisiana, many mayors offices in four different states, the Coast Guard, Department of Homeland Security and city officials too numerous to count. I have also been on Capitol Hill meeting with Senators and their teams from the affected states. It is important to understand that we have put all other business on hold to chase down these people at our own expense. We have gained alignment from each of these parties, who we believed were the decision makers, since they are the true stakeholders. What I need this committee to understand is that at each one of these touch-points, we were told that our product is needed or should be deployed. However, these encouraging statements are quickly followed up with the caveat that BP holds the checkbook. Then we are inevitably told that we will be 'passed on' to someone's contact or a committee within the BP system, then we wait. As recently as this week we were told to sign up on the Deepwater Horizon website, which naturally we have already done. The American public believes that the Government is making these decisions. Our experience has been very different. The decision maker to us is now clear; without BP signoff, we remain sidelined. But how do you break through to BP amidst the millions of proposals, and with a website being the only means of contact?

Why is BP not employing bioaugmentation as part of its arsenal to clean the spill? According to EPA Publication 640/k-93/002: "The United States is the world leader in field implementation of bioremediation, an attractive alternative to conventional methods of cleaning up persistent hazardous wastes in the environment. The potential use of bioremediation technologies is significant, as federal & state governments, private industry and others responsible for environmental cleanup efforts add it to their arsenals of methods for environmental reclamation." This statement was published back in 1994. This has not been our experience with regards to this crisis. We believe that one reason why this may be is because the EPA now states that bioaugmentation is typically used as a polishing step. Bioaugmentation solutions have been classified as alternative technologies, used only after all oil has been reclaimed.

We have found that Japan has done the most comprehensive scientific research to date on the use of bioaugmentation in open water environments. I respectfully refer the committee to the studies submitted as evidence detailing how bioaugmentation is superior to natural attenuation. Time constraints do not allow me to explain in detail their methodology. However I can tell you that remediation with our formula was superior. There are additional studies that have been peer reviewed over the last decade that must be taken into account. I am happy to discuss these studies, which have also been submitted as evidence, at any time outside of this hearing.

Imagine for a moment that we are in the midst of a critical battle. We are in a battle to get the oil in the Gulf before it ruins us. Before it seeps into our marshes and beaches, before it smothers our coral reefs. At risk is a way of life, a destination for tourism, a vast food source, a treasured and fragile ecosystem, a crucial segment of national economy driven by small and large businesses across many industries. So, we anchor miles of boom as a defense, to absorb the oil and keep it at bay. But the waves splash the oil over the booms, and the currents carry it under, and the heavy crude is too thick to be absorbed effectively and the booms sometime break apart. We know that we are losing a treasure and that our children will inherit from us, thousands of miles of damaged coastline.

What can we conclude from this? We can conclude without question that the resources currently deployed for this battle are insufficient to the task at hand. However, the necessary technology does exist. It is ready. It is highly efficacious for this task and has been proven again and again. I hope that this committee can help businesses like ours determine constructive paths forward and with the appropriate stakeholders represented.

Thank you for your time and your attention to this critical and time sensitive matter.

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Chair LANDRIEU. Thank you, Ms. Baird, for that beautiful testimony. That is exactly why we are here today.

Dr. Mitchelmore.

STATEMENT OF CARYS L. MITCHELMORE, PH.D., ASSOCIATE PROFESSOR, UNIVERSITY OF MARYLAND CENTER FOR ENVIRONMENTAL SCIENCE

Dr. MITCHELMORE. Good morning, Madam Chair and members of the Committee. Thank you for inviting me to discuss scientific issues concerning dispersant use. I am Carys Mitchelmore. I am an aquatic toxicologist and have been researching the impact of pollutants, including oil and dispersants, for over 15 years.

My testimony today will focus on some effects and uncertainties regarding dispersant use. Related to this, I would like to stress two major points.

First, significant data gaps in understanding the impacts of dispersants and dispersed oil exist, particularly with subsea application.

Second, limited toxicological data is available to assess the use of alternate dispersants. The use of dispersants is a complex and controversial subject. They are examples of known pollutants purposely added to the marine environment. Dispersants are often proprietary mixtures containing solvents, surfactants, and other additives. They are used to redirect an oil slick by breaking it up into small droplets that move down into the water, spreading in three dimensions. They do not remove oil. They simply alter its chemical and physical properties, changing where it goes, where it ends up, and its potential effects. Sub-surface application keeps the oil in the water, preventing it from coming to the surface.

With the Deepwater Horizon leak, dispersants are used to protect organisms from contacting the surface slick and to protect sensitive shorelines and wetlands from oil coming ashore. This protection is an environmental tradeoff at the expense of organisms in the water column and potentially those on the sea floor.

As highlighted at a recent dispersant workshop, toxicity must be considered when a decision is made to apply chemical dispersants. Toxicity data based on short duration exposures and the risk of death to organisms are those most often used to assess how toxic a chemical is. Indeed, the EPA's National Contingency Plan Product Schedule listing suitable dispersants for use on oil spills details such test data, which is provided by the dispersant manufacturer.

Dispersant toxicity depends on the specific dispersant and species under study. Recent reports have concluded that it is what the dispersants do to the oil that often drives toxicity rather than the inherent toxicity of the dispersant itself. However, it would be beneficial if dispersant toxicity could be further reduced. The correct formulations are stockpiled throughout the USA and are the ones currently used in the Deepwater Horizon leak.

Recently, EPA directed BP to use a less toxic dispersant of similar or more effectiveness than Corexit. Fourteen dispersants are listed on the product schedule. Given EPA's maximum toxicity guidelines for the dispersant mixed with number 2 fuel oil, only three of these listed products would be appropriate for use.

Other toxicological tests are also presented for each dispersant. Of concern is the wide variation in the toxicity values reported for the number 2 fuel oil alone and the reference toxicant between dispersants using the same test species. A reference toxicant is a toxic chemical that is used to demonstrate that the tests are performed correctly and that the data is scientifically robust and defensible. Similar toxicity values for the same reference toxicant should be obtained, irrespective of who carried out the tests.

However, toxicity values for the reference toxicant differ by orders of magnitude, up to nearly 300-fold for the different dispersants. These discrepancies bring into question the accuracy and reliability of the tests.

I believe it would be beneficial for the dispersant manufacturers, especially those small businesses who have limited funds available for toxicity tests, to have their products screened cost effectively and, more importantly, accurately by an independent toxicity testing center.

At the University of Maryland Center for Environmental Science, a similar testing center has been in place since early 2000. The Alliance for Coastal Technologies program is a NOAA-funded initiative that acts as an independent test bed for aquatic sensor technologies and involves numerous partner facilities across the U.S.

A similar type of program would be of benefit for current and future dispersant manufacturers. Each dispersant would be evaluated by three independent and EPA-certified testing laboratories. A federally or industry-funded center could provide this testing at no cost to dispersant manufacturers.

I also recommend a workshop precedes these tests, reevaluating an updating the test methods, including additional tests. Chronic and sediment toxicity tests would be beneficial to understanding potential long-term effects of dispersant use.

Chair LANDRIEU. Twenty seconds.

Dr. MITCHELMORE. In summary, Madam Chair and fellow Senators, the recent spill in the Gulf has brought us into uncharted territories, given the volume and duration of dispersant use and its novel application to the seabed. With more information we can be better prepared to deal with such disasters. Increased knowledge translates to better solutions, and we need that knowledge now.

Thank you.

[The prepared statement of Dr. Mitchelmore follows:]

Written Testimony of Carys L. Mitchelmore, Ph.D.

Before the Senate Committee On Small Business And Entrepreneurship

Hearing entitled " Harnessing Small Business Innovation: Navigating the Evaluation Process for Gulf Coast Oil Cleanup Proposals"

June 17th, 2010
(Testimony submitted June 15th, 2010)

Carys L. Mitchelmore, Ph.D.,
Associate Professor,
University of Maryland Center for Environmental Science,
Chesapeake Biological Laboratory,
P.O. Box 38 (1, Williams Street),
Solomons, MD 20688

Madam Chair and members of the Committee. I am Dr. Carys Mitchelmore and I would like to take this opportunity to thank you for inviting me today to highlight some of the issues concerning the current and future use of dispersants in response to the Deepwater Horizon (DWH) Gulf of Mexico Oil Leak.

By way of background: I am faculty at the University of Maryland Center for Environmental Science, Chesapeake Biological laboratory. I have been conducting research and publishing books and articles for over 15 years concerning the impacts of pollutants, including oil and oil spill dispersants on many aquatic species. Today I am representing my views as a researcher in the field of environmental health. My career path as an aquatic toxicologist was set in place at the young age of 6, after stepping on a tar ball at a local beach. That left a lasting impression on me and I grew up fascinated with the rock pools and, unfortunately the all too often, oil sheens within. I learnt to recognize and avoid the tar balls that were an all to common a sight on the local beaches. I began investigating the impacts of oil on marine organisms following the Aegean Sea Oil spill in 1992. Since then, as opportunities have arisen, I have carried out research investigating the effects of oil and it's constituent compounds on bivalves, corals, fish and reptiles. Specifically, in the last few years my focus has been on investigating the routes of exposure to and the toxicity of the dispersant Corexit 9500 and dispersed oil on sensitive species, such as corals (REFS 1-9). I was also co-author on the recent 2005 NRC publication on "Oil Spill Dispersants: Efficacy and Effects" (REF 10).

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The unfortunate recent events in the Gulf have once again brought to the forefront issues pertaining to the impacts of oil, oil spill dispersants and dispersed oil in our marine and coastal ecosystems. My testimony today will focus on issues relating to the use of dispersants, their potential impacts, the uncertainties (data gaps) regarding oil spill dispersants and dispersed oil in addition to issues pertaining to the use of alternate dispersant formulations.

The three key points I would like to raise today are the following:

1. Numerous data gaps on the effects of dispersants and dispersed oil exist hampering a full assessment of the risks of long-term surface dispersant use in the Deepwater Horizon Oil leak.

- There are significant data gaps and uncertainties relating to understanding sublethal, delayed and long-term effects of dispersant use, particularly to sensitive species (e.g. corals) and impacts to the food web.

2. Limited data exists regarding the toxicity of alternate dispersants.

- Toxicity tests for products listed on EPA's National Contingency Plan Product Schedule (NCPPS) are limited in scope and inconsistencies with respect to the reported toxicity of the reference toxicant further reduce the ability to ascertain less toxic products.

3. The subsurface use of dispersants at the site of the oil leak is unchartered territory and has not been tested prior to its use in the Deepwater Horizon Oil leak.

- The effectiveness, fate (breakdown) and toxicological effects of dispersant use in deep waters is unknown.
- There is insufficient data and baseline mapping of subsurface oil plumes and what species are present on the subfloor and at various depths in the overlying water column.

Overview and Introduction: What are dispersants and why are they used?

When oil is spilled response decisions are quickly made based upon the best available science and on numerous and often continually changing variables. Common response options used include, mechanical recovery with the use of skimmers and booms, *in situ*

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burning and the use of chemical dispersants. Mechanical recovery is the preferred method as it removes oil from the environment but it is not always effective given poor weather conditions (i.e. high waves etc). In the DWH incident all of these response options have been used. It was recently stated that; "no combination of response options can fully contain oil or mitigate the impacts from a spill the size and complexity of the DWH incident" (REF 11).

The decision to use chemical dispersants also depends on many factors, including, the type of oil and extent of oil weathering, where the most sensitive habitats and species are located, weather conditions (wave action is required) and the availability of dispersants and aircrafts and/or other dispersal vessels.

The use of dispersants is an environmental trade-off; the protection of one habitat at the cost of another. In the current DWH Gulf of Mexico oil leak dispersants are used to protect the shoreline (and surface) species at the expense of organisms residing in the water column and potentially those in the benthic (seabed) environment.

The Gulf of Mexico contains sensitive coastal habitats, such as wetlands, that serve as nursery grounds to numerous species, including those that migrate long distances to these breeding areas. Oil coated shorelines not only decimate intertidal food reserves for ourselves (e.g. oysters, crabs, shrimp, fish) and other organisms but will also cripple recreational activities and local economies. Oil, if allowed to come to shore, can remain in those habitats (e.g. in the sediment) for long periods of time continually exposing and impacting local resources for years or decades following the oil spill. In comparison with the shorelines and near-shore habitats, much less is known regarding the amounts and types of species present in the water column and the subfloor in both time and space.

Dispersants are chemical mixtures containing solvents, surfactants and other additives, (including proprietary chemicals) that are used to facilitate and enhance the break-up with wave energy of the surface oil slick into small oil droplets that disperse into the waters below. They **do not** remove oil from the environment, they simply change the inherent chemical and physical properties of the oil and in doing so alter the oil's transport, fate and potential effects. The small droplets stay suspended in the water column and spread in

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three dimensions instead of two. The premise behind dispersant use is that this oil movement results in a plume of dispersed oil and dispersants that is quickly reduced to low levels with depth in the Ocean. In addition, this dispersal effectively increases the surface area to volume ratio of oil so that microorganisms that naturally degrade oil can be more effective in doing so. However, as stated in the NRC reports (REF 10 and 12) conflicting scientific data does exist regarding this statement and recommendations were made to reduce uncertainties with further research.

The use of dispersants is a complex and controversial subject. They are examples of known pollutants, albeit ones listed as having low-to-moderate acute toxicities, purposely added to the marine environment. Concerns regarding their use in the DWH Oil leak are related to this issue and also their potential impacts to human health particularly given the volumes involved (currently as of June 15th, over 1.3 million gallons) and the huge data gaps concerning their long-term effects to humans and wildlife.

Recently a scientific meeting (May 26-27th) of over 50 experts from government agencies, academia and industry was convened specifically to provide input for the Gulf of Mexico's regional response teams (4 & 6) on the use and effects of dispersant and dispersed oil in going forward with future incident decisions. It was the consensus of the group that "up to this point, the use of dispersants and the effects of dispersing oil into the water column has generally been less environmentally harmful than allowing the oil to migrate on the surface into the sensitive wetlands and near shore coastal habitats" (see REF 11). However, concerns were made over the unknowns especially regarding the fate and potential long-term effects (discussed in later sections herein) of dispersants and dispersed oil and their continued long-term use. The novel application of dispersants subsurface at the site of the leak was noted as uncharted territory and requires detailed monitoring and future research efforts. Therefore, some strong caveats were mentioned following the consensus statement;

(1) that increased monitoring efforts at the surface and subsurface should be carried out so that oil, dispersed oil and other parameters (e.g. dissolved oxygen) can be more accurately tracked in space and time in combination with enhanced 3D models of the subsurface oil plumes,

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(2) that continued re-assessments should be made to ascertain that these trade-off decisions are still scientifically sound. I highlight and emphasize these two points.

In addition, it is quite possible that with increasing time these trade-off decisions could change given 1) the volume of dispersants used and the footprint (in space and time) of the impacted area in the water-column, 2) sensitive species movement into and out of different habitats (e.g. bluefin tuna and other species spawning in the open Ocean waters), 3) continued and increasing impact of oil onto sensitive shorelines, therefore, reducing the percentage of habitat saved by using dispersants. Of concern is that we do not (and probably never will) know the extent of the harm and loss of organisms in the water column and on the seabed. Mapping of who, what, and where species are in these habitats is limited or in the case of the seabed down at 5000ft, non-existent.

Summary of what is known about the short and long-term effects (toxicity) of dispersants and dispersed oil.

I have previously detailed in other testimonies (dated May 19th and June 10th) a summary of what is currently known (or not known) about the short and long-term effects of dispersant and dispersed oil. A summary of the main uncertainties, data gaps and questions regarding dispersant use is included below but for further details please refer to the previous testimonies (see REFS 13 and 14).

In assessing the environmental trade-off decision to use dispersants questions are first asked regarding dispersant effectiveness. Is the oil chemically dispersable and are the weather conditions conducive to achieve this? Following on from these assessments, as highlighted in the executive summary from the recent dispersant meeting; "**toxicity must be considered when a decision is made to apply chemical dispersants**" (REF 11).

Although dispersants themselves would not be released into the environment alone, toxicity tests are required (for human and environmental safety) so that they can be approved for use (i.e. listed on the EPA's National Contingency Plan Product Schedule (NCPPS) table; see REF 15) and included on the products material data safety sheets (MSDS).

1. Numerous data gaps on the effects of dispersant and dispersed oil exist.

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As concluded in both of the NRC dispersant reports (REFS 10, 12) limited toxicological information exists to fully assess the risks to organisms to dispersants and dispersed oil. Although it should be noted that this lack of toxicological data is not unique to oil spill dispersants. It is mirrored by the tens of thousands of chemical contaminants (again often proprietary mixtures) that are also being released into the environment. Environmental trade-off decisions on the use of dispersants requires scientifically robust toxicity test data particularly in species that are similar to those resident species that may be impacted following an Oil Spill.

The majority of toxicity data regarding dispersants and dispersed oil are often limited in scope and address acute and short-term effects derived from laboratory toxicity tests. Acute toxicity tests are used to compare toxicity between chemicals and between organisms to identify highly toxic chemicals and sensitive organisms. Results are standardized and presented as the lethal concentration of a chemical that causes death to 50% of the test organisms following a set exposure time (i.e. LC50, 24-96 hours). The **lower** the LC50 level is (i.e. a lower number), the more toxic the chemical. There is much more limited data available detailing the potential sublethal or delayed effects of exposure, which could be much more detrimental to a population in the long term (see later section).

a) How toxic are the dispersants alone?

With respect to dispersants, toxicity depends upon the specific dispersant under study, the species being tested and also the life stage of the particular species under investigation. Some organisms are much more sensitive to (i.e. affected by) dispersants than others. For example, gulf mysids and copepods (crustaceans), diatoms (algae) and fish larvae are affected at low concentrations of Corexit 9500 (i.e. LC50, 96 hour at the low ppm level). However, other organisms are only affected by 3-10-fold higher concentrations of Corexit 9500. To date the majority of toxicity studies (those listed in the NCPPS table and in the scientific literature; see REF 10) have been focused on the Corexit formulations. Fewer toxicity studies (i.e. less species evaluated) have been carried out for Corexit 9500 compared with the earlier Corexit 9527 formulation. The Corexit formations (earlier the Corexit 9527 and then replaced by the Corexit 9500 product) have been those chosen and

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stockpiled for use across the USA.

In summary, some research studies have found dispersants to be less toxic compared with oil or dispersed oil in direct comparisons, although some studies report an increased dispersant toxicity compared with oil or dispersed oil (see REF 10).

b) How toxic is dispersed oil?

There is conflicting scientific evidence to date regarding the toxicity of dispersed oil in comparison to oil. The 2005 NRC report addresses this at length (REF 10). For example, some studies have stated that dispersed oil is more toxic than oil, others have shown that the toxicities of dispersed oil and oil are equivalent. The NRC 1989 report concluded that the acute lethal toxicity of chemically dispersed oil is primarily associated not with the dispersant but with the dispersed oil and it's dissolved constituents following dispersal. Some species and life stages are much more sensitive than others, for example, the LC50s for oyster and fish larvae were as low as 3mg / l (i.e. 3ppm) for dispersant alone (Corexit 9527) and 1mg / l (i.e. 1ppm) for dispersed oil (REF 16).

It is inherently difficult to compare dispersed oil with oil and discrepancies can arise simply due to the experimental design of the toxicity tests. Therefore, in the 1990's efforts were made to standardize toxicity tests (i.e. CROSERF and following publications; see discussion in REF 10). Great advances were made at that time, however, there is a dire need to expand this work further to include new additional and complicating issues that have arisen in the scientific literature since this original CROSERF working group. For example, in translucent organisms (e.g. fish larvae) the toxicity of accumulated oil can be 12-50,000 times underestimated because the traditional toxicity tests were not carried out under conditions of natural sunlight (REF 10). This phenomenon called 'photoenhanced toxicity' may be critical in determining the effects of dispersed oil in surface dwelling (e.g. translucent pelagic larvae) and shallow water translucent organisms (including corals).

c) Sublethal, delayed and long-term effects of dispersants and dispersed oil.

As summarized in the recent NRC publications oil and oil spill dispersants can cause many

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effects, including death and a variety of sublethal impacts including reduced growth, reproduction, cardiac dysfunction, immune system suppression, metabolic and bioenergetic effects, developmental deformities, carcinogenic, mutagenic, teratogenic effects and alterations in behavior (REFS 10, 12). These more subtle endpoints than death can none-the-less have huge consequences for populations. Additionally, delayed effects may occur which are hard to track and follow following an oil spill event unless monitoring programs span years after the spill event. Even then these monitoring programs may come too late i.e. if baseline monitoring before the spill was not carried out it is impossible to fully assess the final extent of damage.

Some aquatic species are more sensitive than others to dispersants and /or dispersed oil. Therefore, making trade-off decisions between species is difficult if toxicity data is not available for those or closely related species. Additionally, it has been shown that it is the early life stages of organisms, e.g. eggs and larvae that are more sensitive to chemicals and are at particular risk. This is especially of concern given that these life stages often inhabit surface waters, especially as is the case for the Gulf of Mexico now given that this is the spawning and reproductive period for many species. A dispersed oil plume contains high levels of dispersant, dissolved oil and oil droplets meters down into the water column where these and other essential food-web items (e.g. phytoplankton (algae) and zooplankton) reside.

Studies have also shown that dispersants may facilitate the uptake and potentially the bioaccumulation of oil constituents in organisms from ingestion routes or by oil droplets sticking to biological surfaces (e.g. fish gills) and facilitating the dissolution of oil components (dissolved polycyclic aromatic hydrocarbons (PAHs)) into tissues. However, dispersed oil has also been shown to be less 'sticky' and does not interact with biological surfaces or sediment (see discussions in REF 10). These issues relating to the fate (i.e. where the oil ends up) are important to know for a full risk assessment on the impact of dispersants.

Suspension (filter) feeders, such as oysters and mussels, will bioaccumulate oil droplets in addition to the dissolved oil components. Dispersed oil droplets generally range in size from <3 to 80μm. These sizes overlap with the preferred size range of food for many suspension-

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feeding organisms, including zooplankton (see later). Oysters and amphipods can select these particles, as they are similar in size to the phytoplankton they feed upon.

The importance of this oil droplet (or particle bound oil PAH) exposure route was highlighted in studies flowing the New Carissa Oil spill near Coos Bay, Oregon. Mussels (suspension feeders) contained much higher levels of oil constituents (PAHs; ~500 times more) than crabs (an omnivore) collected from the same area (details contained in REF 10). Chemical (PAH) profiles also highlighted that the mussels had accumulated the PAHs both from the dissolved oil constituents in the water and from oil droplets whereas crabs had only accumulated them from the dissolved phase. These data are very important as current computer models designed to predict the effects of an oil spill do not take into account exposure routes other than the dissolved components. This research has implications for the effects of a dispersed oil plume on coastal fisheries and highlights the importance in understanding the routes of exposure of oil to species and in determining the levels of oil constituents in each of these phases for a better understanding of risk.

Understanding basic toxicity mechanisms and species sensitivity across diverse taxa in laboratory studies aid in the risk assessment of what organisms are potentially those most at risk. During a spill these data can be compared with the predicted dispersed oil concentrations (using computer modeling) or actual oil concentrations measured in the field. There is still a need to fill the serious fundamental scientific data gaps regarding the basic toxicology of dispersants and dispersed oil as highlighted in the NRC reports.

d) Specific uncertainties and data gaps.

There are still many unanswered questions that we need to know to fully assess the risks involved with dispersants and dispersed oil. These were highlighted in the 2005 NRC report (REF 10). Although the 2005 NRC study was specifically tasked to address the potential risks of dispersant use in near-shore environments many of the conclusions of the report are valid in open-ocean spills, such as the DWH leak. Many questions and data gaps needed for improved risk analyses and ultimately effective oil spill responses were highlighted. Some basic concepts and issues regarding dispersed oil fate and effects simply lacked adequate research. In addition other areas of study require increased

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research efforts, as conflicting data currently exists.

The many questions and issues that we have limited data for include the following;

1. What is the fate of dispersants and dispersed oil (i.e. where will they end up, in what form, how biodegradable are they and what are the break-down products? Are the break-down products more or less toxic?
2. What are the potential-long term effects of dispersant and dispersed oil, even after a brief exposure, to aquatic organisms? What are the sublethal effects? Will there be delayed effects?
3. There are limited studies on sensitive at risk organisms (e.g. corals).
4. Does dispersed oil reduce or enhance uptake/bioavailability of oil to organisms?
5. Does photoenhanced toxicity increase the 'footprint' of effects?
6. Does dispersed oil reduce or enhance microbial degradation? If enhanced will this bacterial 'bloom' result in an increased dead zone in the water (i.e. increased footprint in hypoxic zones or just a significant reduction in water oxygen levels)?
7. Is dispersed oil less 'sticky' to biological surfaces and sediment?
8. What are the routes of exposure to organisms to dispersed oil? Is it dissolved PAHs or the oil droplets, or both.
9. How will the food web be impacted? Issues relating to trophic transfer and species loss.
10. What are the new risks with subsea application? Is the oil readily biodegradable? Will it cause more damage than allowing the oil components to disperse into the air, weather and degrade by abiotic and biotic surface processes?

Unfortunately many of these questions are unanswered given the very limited opportunities available to carry out research in these areas. Some of the research recommendations made in the 1989 NRC report (REF 11) were once again highlighted in the 2005 NRC report (REF 10) as these research questions had not been undertaken during those 16 years. Since the 2005 NRC report some limited progress has been made in addressing the data gaps outlined.

2) Are there less toxic alternatives to the currently used Corexit formulations?

As detailed in the NCPPS there are fourteen products listed as approved for use as oil spill

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dispersants. In comparison with the available literature on the Corexit formulations even more limited and scientifically robust toxicity data exists (that is publically available) for the alternative dispersant formulations.

Recently the EPA (directive dated May 10th and addendum 2 on May 20th) requested that BP should use a less toxic dispersant (of similar reported effectiveness). Given the EPAs requested LC50 guidelines (LC50 values of 'greater' than or equal to 23 or 18 ppm for the fish and shrimp tests respectively) only **three** of the listed products on the EPA NCPPS would meet these toxicity criteria (see Tables 1 and 2 with suitable products highlighted in red; see footnote in tables for specific details). BP responded to EPA's request (posted on May 22nd) and defended their use of the Corexit formulations stating limited toxicity data, potential long-term effects of some components in some of the alternative formulations coupled with limited availability in the volumes required for the DWH Gulf of Mexico oil leak. Following BP's response the EPA announced (addendum 3 on May 26th) that in addition to requiring that BP reduces it's use of dispersant (by around 75%) particularly at the surface they also stated that they will be carrying out toxicity tests to further evaluate these alternative products.

It is certainly a step in the right direction to consider the use of alternative dispersants that contain less inherent toxicity than the Corexit formulations, although considerations should also be made regarding;

(1) The effectiveness of the dispersant on the DWH oil (or at least oil of similar properties e.g. South Louisiana crude), especially at depth.
(2) The quantity of the alternative dispersant needed to be effective.
(3) The EXACT chemical composition (including listing of the proprietary chemicals AND their specific concentration in the mixture) of the dispersant. Many of the dispersants contain proprietary mixtures and do not list their chemical components in detail on the MSDS sheets (where available).
(4) The half-life of the dispersant and the potential breakdown products.
(5) Safety to applicators and other people who may be exposed to the aerial application of dispersants.

The toxicity data listed on the EPA NCPPS is limited in that it reports only acute toxicity to

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two standard test organisms, a larval fish and the mysid shrimp. However, given the perceived timing of exposure to organisms under a dispersed oil slick (i.e. acute exposures) this data is informative in assessing the relative toxicities of the different dispersants.

The data presented in the NCPPS summary table reports only the most pertinent LC50 values i.e. the data from the tests using the dispersant in a 1:10 ratio with No. 2 Fuel oil (see REF 17). These toxicity data are supplied to the EPA from the respective industries/manufacturers of the specific dispersant products. The methodology used to carry out these tests are standardized by the EPA so that all products are tested using the same test conditions (see Appendix C to 40 CFR part 300; as listed in REF 17). This details how the test solutions should be made, the concentrations to use, the specific test organisms, timing and other quality control / assurance checks, including positive and negative controls. Additional information and further toxicity tests for the products are also available on the EPA NCPPS site. In each dispersant's individual report (see REF 18 the toxicity section consists of four specific toxicity tests, all reporting LC50 values using the standard test organisms (i.e. the larval fish (after 96 hours of exposure) and the mysid shrimp (following 48 hours of exposure)):

(1) Dispersant only.
(2) No. 2 Fuel Oil.
(3) Dispersant in a 1:10 ratio with the No. 2 Fuel Oil.
(4) Reference toxicant.

In evaluating the summary data for the toxicity tests listed above (1-4) for potential alternatives in comparison to the Corexit formulations of concern is the wide variation in the LC50s reported for the No. 2 Fuel Oil and even furthermore the reference toxicity values between dispersants using the same test species (see Tables 1 and 2).

A reference toxicant is a toxic chemical that is used in performing toxicity tests to demonstrate the laboratories ability to perform the test correctly and obtain statistically robust and defensible data. Using set standard toxicity test methods and test organisms there should be good correlations between the LC50 values generated for the reference toxicant between tests in the same laboratory and between different laboratories. Common reference toxicants for marine species include, copper sulfate and potassium chloride. The

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reference toxicant that is required by the EPA for dispersant toxicity testing (REF 18) is the surfactant, dodecyl sodium sulfate (SDS; also called DSS). Having reference toxicants outside of the expected LC50 range could occur because of numerous factors. For example, poor quality of organisms, water, or the reference toxicant or some other factors influencing the experiments. Ultimately if you do not have a consistent LC50 for your reference toxicant then you cannot assume any of the other tests are reporting accurate data and the experiments should be repeated. Acute toxicity tests take 48-96 hours for completion.

Noteworthy is that the reference toxicant LC50s for the different dispersants listed on the NCPPS differ by orders of magnitude, up to nearly 300-fold. For example, in Table 2 reference toxicant data for the mysid shrimp tests range from an LC50 (ppm, 96-hr) from 0.98 (for Sea Brat #4) to 267.7 (for Nokomis 3-F4). One product (Nokomis 3-AA) used copper sulfate as a reference toxicant instead of the EPA required SDS reference toxicant. These issues are of concern if you are trying to compare the relative toxicity of the dispersants. Indeed, this currently, cannot be accurately assessed given the data presented on the NCPPS. These toxicity tests should be repeated. Indeed the EPA announced that they are carrying out (i.e. Addendum 3 dated May 27th) further toxicity tests, although the specific details as to the type and extent of these tests were not detailed.

a) Recommendations and future needs.

Moving forward for the DWH incident and future spills what should be carried out, in addition to scientifically robust data for the acute toxicity tests should be other longer-term (chronic) toxicity tests. These can be carried out using these and similar standard laboratory test organisms and are of 7-21 days in duration depending upon the species. These tests report data such as, growth and reproductive inhibition. Given the subsurface application of dispersants sediment toxicity tests may also be of value.

b) Proposal for an Independent test-bed for dispersants.

Unfortunately as noted earlier some of the data presented for the alternative dispersants is of limited value. In addition to effectiveness testing, accurate and reliable toxicity tests are

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required so that these dispersants can be considered for use. I believe it would be beneficial for the dispersant manufacturers, especially those small businesses who have much limited funds available for toxicity testing to have their products screened more cost effectively (see below) and more importantly accurately by an Independent toxicity testing center.

At the University of Maryland Center for Environmental Science, Chesapeake Biological Laboratory (CBL) a similar testing center model is located. The Alliance for Technologies (ACT) program is a NOAA funded initiative that, for one of it's directives, acts as an Independent test-bed for aquatic sensor technologies (established in 2002). CBL is the headquarters for this program and partner institutions are spread at locations across the USA. Companies can submit their products for testing so that they can be independently compared with their competitors. It is a data and report generation exercise, fully independent and no endorsements of the products are made. To achieve this ACT carries out extensive tests using the same methodology at various sites across the USA for sensors in turn that measure the same endpoint (e.g. dissolved oxygen, DO).

Given the data currently available for dispersants, this type of program would be of use to current and future dispersant manufacturers. In brief, I propose a similar program to ACT for dispersant toxicity screening using the same basic model/framework already in place for the ACT program. Specifically, dispersants will be evaluated for acute toxicity (using the methods as detailed in EPAs Appendix C (REF 18)). Although I propose the use of a different reference toxicant that the one currently listed (SDS). In addition a re-evaluation and update of the current test protocols (last updated in 1997) are warranted. Furthermore, in the short-term, to aid in decisions for the DWH leak, toxicity tests could be carried out using a more relevant oil (either the oil currently leaking or a similar standard oil such as South Louisiana crude). To initiate this program a workshop should also be held to re-evaluate dispersant and dispersed oil standard toxicity test procedures (i.e. building on and updating the CROSERF protocols).

In summary each dispersant will be evaluated by THREE independent and EPA certified toxicity testing laboratories. These data will be collated and a final report generated. I would also propose additional screening. As stated above screening dispersants for chronic toxicity would be beneficial to understanding their potential long-term effects.

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There are numerous business models that could be used for this testing facility. For example, if given agency and/or industry funding this testing facility could be run at no cost to the manufacturer. This would be particularly useful for small businesses trying to assess bringing a new potential oil spill dispersant to market. Furthermore, this test center could expand to investigate other oil spill mitigation and response strategies in addition to dispersants.

3) Subsurface application issues:

The unfortunate recent events in the Gulf of Mexico have once again raised many of the issues discussed above regarding the fate and effects of dispersants and dispersed oil in addition to adding further questions regarding the novel use of undersea dispersant application. As many have asked in the past weeks, potentially what will the environmental consequences be of the dispersant application, what will be affected, to what extent and how? This is impossible to predict for many reasons.

Open ocean spills are pre-approved (in waters >10m depth and >3 miles offshore) for dispersant application given the minimal perceived risks to the ocean and the seafloor based upon the depth and volume of water available to dilute the dispersed oil. However, this DWH oil spill is unique and a first for many reasons opening up many questions regarding the decision to use dispersants and what their potential effects may be. First, the sheer volume of dispersants applied is unprecedented; no spill in U.S. waters has used the amount of chemical dispersants that have currently been released (over 1.3 million gallons as of June 15th, 2010). Although it should be noted that the IXTOC spill (1979; see REF 19) in the Gulf of Mexico used a total of 2.5 million gallons of dispersant (not in U.S. waters), two-thirds of which were Corexit 9527. However, this was over a ten month period and not <2 months as in the DWH incident. As in the IXTOC spill dispersants are usually only applied to surface slicks. In the DWH leak dispersants are also being applied at the leak site. The question is how will this dispersed oil impact the benthic (seafloor) environment?

The surface oil slick is easily viewed via satellite but what about the sub-surface plume(s)? In toxicology it is the concentration of and the duration of exposure to a toxicant that determines its effect. Therefore, we need to know where the plume is, at what

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concentration, for how long and what species are present. Various agencies, oil spill responders and independent scientists are running models trying to predict the oil plumes concentration and trajectory. Additionally some measurements of oil concentrations/ particle sizes are being taken at depths in the Ocean around the spill site. Only in knowing the size of this plume in three dimensions, the concentration of the dispersed oil in the plume at these locations and the duration of exposure in one area, will predictions be able to be made of the potential effect. Indeed increased monitoring of subsurface plumes was a recommendation from the recent dispersant meeting (REF 11). Unlike with oil impacts along the coast and shoreline, it is very difficult to see the actual effects of the dispersed oil in the Ocean. Organisms that die will fall to the seafloor. Those that do not die may not show sublethal repercussions for a while. Declining populations of a water column species may occur and shoreline species may become severely limited in their food sources in addition to being faced with a contaminated food source.

With the increasing volume of oil and dispersants entering the system for extended periods of time there may be, at some time, a point reached in which the harm to the water column organisms (and now potentially benthic organisms) does not outweigh the harm to the shoreline. This may be particularly relevant if shorelines are increasingly being impacted by the oil coming onshore. Therefore, these original trade-off decisions will become less clear. These dispersants are approved for use in the open ocean, although there is no limitation as to how much and for how long they can be used. How long can the 'solution to pollution' reasoning hold? Furthermore, with the continued production of dispersed oil plumes from the surface and from the ocean floor will the dispersed oil plume reach the shallower, coastal locations that the decision to use dispersants has been based on? It is quite possible that a dispersed oil plume may reach and impact a shoreline.

In summary

Madam Chair and members of the Committee I would like to thank you again for allowing me to testify today regarding the effects of oil spill dispersants. We face huge challenges to protect our coastal and oceanic ecosystems. As in the case of oil spills this sometimes involves making difficult trade-off decisions on what ecosystem to protect at the expense of another. However, pollution cannot simply be treated as 'out of sight out of mind' or that 'the solution to pollution is dilution'. These assumptions need careful analyses on a continued

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basis that depend upon sound scientific data. A recommendation is to initiate a test-bed facility that would screen dispersants for toxicity using three independent laboratories. The proprietary components in dispersants should be made available to researchers and further toxicity testing of dispersants is required especially if considering alternate formulations. Although many decisions are based upon acute short-term toxicity studies we are constantly unraveling new and more subtle sublethal toxicological pathways and toxicity mechanisms. These sublethal impacts ultimately have dire consequences to a species survival, consequences of which alter the fine balance of food webs, alter ecosystem services, and the overall health of the environment. During an oil spill event it is hard to assess the effects on the organisms that you do not see and equally challenging to follow the potential long-term consequences of the spill. More respect needs to be given to efforts directed at baseline monitoring and mapping of our Oceans and seafloor ecosystems. We cannot assess impacts or follow restoration efforts unless we know what species were there beforehand. We need to monitor the subsurface plume(s) in space and time.

There are still many unanswered questions and uncertainties associated with the decisions to apply dispersants. I emphasize the recommendations for additional studies made in the recent NRC report that will help fill these critical data gaps in the knowledge and understanding of the behavior and interaction of dispersed oil on the biotic components of ecosystems (see REF 10). Whatever choices are made this unfortunate recent event in the Gulf will impact ecosystem health, local economies, food sources and recreational activities, the extent to which is currently unknown. We need better information to close these uncertainty gaps that oil spill response decisions are based upon and we need it now. Thank you.

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Table 1: Acute Toxicity data for larval fish (*Menidia beryllina*) as the lethal concentration to kill 50% of the test organisms (LC50) following 96 hours of exposure in parts per million (ppm).

Dispersant	Fish Toxicity (LC50 ppm, 96hr)			
	Dispersant & No. 2 Fuel Oil	No. 2 Fuel Oil	Dispersant Only	Reference Toxicant
NOKOMIS 3-F4	100.00	100.00	29.80	159.6 (DSS)
NEOS AB3000	57.	201.8	91.1	1.5 (DSS)
MARE CLEAN 200	42	10.72	1996	7.07 (SDS)
SEA BRAT #4	23.00	16.00	30.00	1.14 (DSS)
SAF-RON GOLD	9.25	16.76	29.43	15.94 (SLS)
ZI-400	8.35	18.05	31.76	16.13 (SLS)
Dispersit SPC 1000	7.9	11.6	3.5	6.3 (SDS)
NOKOMIS 3-AA	7.03**	22.50	34.22	-
Biodispers	5.95	12.42	13.46	11.84 (SDS)
Finasol OSR 52	5.40	5.95	11.66	8.54 (SDS)
Corexit EC9527A	4.49	10.72	14.57	7.07 (DSS)
JD-109	3.84	9.35	1.90	2.63 (DSS)
JD-2000	3.59	8.39	407.00	2.22 (SDS)
Corexit EC9500A	2.61	10.72	25.20	7.07 (SDS)

Data obtained from EPA National Contingency Plan Product Schedule Toxicity and Effectiveness Summaries: http://www.epa.gov/emergencies/content/ncp/tox_tables.htm

Detailed toxicity data obtained from:
http://www.epa.gov/emergencies/content/ncp/product_schedule.htm

NOTE: Red shading denotes those dispersants that comply with the EPAs guidelines set forth in the Directive from May 10th, Addendum 2 of May 20th. http://www.epa.gov/bpspill/dispersants.html

Suitable dispersants would have an LC50 value of greater than or equal to 23.00 and 18.00 for the fish and shrimp toxicity tests respectively. **; in my original calculations (testimony on May 21st; bipartisan briefing, House Committee on Energy and Commerce, Chairman Markey) Nokomis 3-AA was originally included in this suitable group. However, it appears the summary NCPPS table of dispersant toxicity detailing the product toxicities (1:10 product-to-No.2 Fuel Oil ratio) are actually the data for the dispersant only toxicities tests. This correction now discounts Nokomis 3-AA as a suitable less toxic alternative.

-; reference toxicant was $CuSO_4$ (5.36 96-hr and 7.83 48-hr for fish and shrimp respectively)

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Table 2: Acute Toxicity data for the invertebrate mysid shrimp (*Mysidopsis bahia*) as the lethal concentration to kill 50% of the test organisms (LC50) following 48 hours of exposure in parts per million (ppm).

Dispersant	Shrimp Toxicity (LC50 ppm, 48hr)			
	Dispersant & No. 2 Fuel Oil	No. 2 Fuel Oil	Dispersant Only	Reference Toxicant
NOKOMIS 3-F4	58.40	72.70	32.20	267.7 (DSS)
NEOS AB3000	25.0	11.5	33.0	9.3 (DSS)
SEA BRAT #4	18.00	14.00	14.00	0.98 (DSS)
MARE CLEAN 200	9.84	16.12	938	9.82 (SDS)
Dispersit SPC 1000	8.2	11.7	16.6	11.7 (SDS)
Corexit EC9527A	6.60	16.12	24.14	9.82 (DSS)
NOKOMIS 3-AA	5.56**	11.07	20.16	-
JD-109	3.51	3.13	1.18	8.06 (DSS)
Corexit EC9500A	3.40	16.12	32.23	9.82 (SDS)
SAF-RON GOLD	3.04	5.93	63.00	9.83 (SLS)
Biodispers	2.66	2.82	78.90	21.81 (SDS)
Finasol OSR 52	2.37	2.37	9.37	21.81 (SDS)
JD-2000	2.19	2.58	90.50	10.50 (SDS)
ZI-400	1.77	2.66	20.96	27.80 (SLS)

Data obtained from EPA National Contingency Plan Product Schedule Toxicity and Effectiveness Summaries: http://www.epa.gov/emergencies/content/ncp/tox_tables.htm

Detailed toxicity data obtained from:
http://www.epa.gov/emergencies/content/ncp/product_schedule.htm

NOTE: Red shading denotes those dispersants that comply with the EPAs guidelines set forth in the Directive from May 10th, Addendum 2 of May 20th. http://www.epa.gov/bpspill/dispersants.html

Suitable dispersants would have an LC50 value of greater than or equal to 23.00 and 18.00 for the fish and shrimp toxicity tests respectively. **; in my original calculations (testimony on May 21st ; bipartisan briefing, House Committee on Energy and Commerce, Chairman Markey) Nokomis 3-AA was originally included in this suitable group. However, it appears the summary NCPPS table of dispersant toxicity detailing the product toxicities (1:10 product-to-No.2 Fuel Oil ratio) are actually the data for the dispersant only toxicities tests. This correction now discounts Nokomis 3-AA as a suitable less toxic alternative.

-; reference toxicant was $CuSO_4$ (5.36 96-hr and 7.83 48-hr for fish and shrimp respectively)

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Chair LANDRIEU. Thank you very much.

Mr. Costner.

STATEMENT OF KEVIN COSTNER, FOUNDER, COSTNER INDUSTRIES (CINC), AND CO-FOUNDER, OCEAN THERAPY SOLUTIONS, WESTPAC RESOURCES

Mr. COSTNER. Thank you, Madam Chairman, members of the Committee. Thank you for inviting me.

We are here today because there are now some 60,000 barrels of oil gushing into the Gulf every 24 hours, with no end in sight. We are here today because a carefully crafted plan designed by the oil industry and rubber-stamped by the MMS claimed it could handle spills of up to 250,000 barrels a day, but turned out not to be a plan at all. We are all here, and now the whole world is watching as America fumbles its way through the greatest environmental disaster in history, and I find myself here because 17 years ago I thought I could play a part in this reoccurring nightmare.

I have come here with a technology that was developed for this very moment we find ourselves in as a people, as a nation, as a neighbor to every country that shares the precious Gulf of Mexico. I am a private entrepreneur, a dreamer, if you will, who saw a problem and committed to a big idea. I took a technology from the Department of Energy in 1993. It was about 6 inches tall. It was developed to separate metals. But what if? What if we could take that little idea, this little machine and scale it up to separate large volumes of oil from water? I believe that we could manufacture and deploy a rugged and portable machine under these harsh conditions. We would create five different sizes, with the largest being able to up to 200 gallons per minute with both oil and water outputs at 99.9 percent purity.

In 2 years, the dream moved from research and development to a commercially viable product ready to be deployed anywhere in the world. This was done without the help of outside investors or Government grants. The price tag would be over $20 million, and I would pay it. The need was clear: An industry that would operate year-round, 24 hours a day, in or near any body of water at depths and complexities that our modern oil industry are working in is going to experience spills. They are going to experience spills on a daily basis, large or small, accidental or otherwise, reported or not.

I started a business without a guarantee of a market, but clearly there is a market out there. Did I expect the oil industry to open its arms when I presented an oil-water separator, a solution to their single greatest liability? Yes. Did I expect leaders here and abroad to recognize the importance of protection where we profit? Yes, I did. But I was wrong. The list of Government agencies, foreign and domestic oil companies who saw our technology more than a decade ago reads like a Who's Who of those who needed it, those who should have been looking for it, and probably more to the point, those who should have been developing it themselves.

So what was the problem? Was it too small? Was it too portable? Was there already something like it in the big plan? I do not know. My big idea has been sitting quietly for 10 years in a modest Nevada facility. Then 2 days ago, I got a call from Doug Suttles, COO of exploration and production for BP. He was pleased. He was ex-

cited. He told me that the machine worked. He told me that it was working against the dispersants, that it was handling the variations of oil mixtures and thickness present in the Gulf. He ordered 32 machines and told me that this represented the beginning of us working together, not only for this spill but for going forward, and that we would have a legitimate response in the future.

I am proud that this technology can be part of the solution for the Gulf. Am I proud that this technology can be part of the solution in the Gulf? Yes. To a certain extent, to be completely honest, I feel vindicated. I think that perhaps I will call my mother.

But this is not a Hollywood ending for me. The path to arrive at this moment was steep and formidable. That is why I have been called to testify before this Committee, to explain why 21st century technology has sat idly on the shelf for 10 years when it could have been deployed as a first, most efficient responder to mitigate the Deepwater Horizon catastrophe.

The business of oil spill cleanup is not pretty. It is not sexy. Safety never is. It is not a profit center. It is perfectly clear that the oil companies have not invested in cleanup technology to match their 21st century appetite in operations.

In the last 2 weeks, my company began an exciting collaboration with Edison Schwest, the largest oil servicer in the Gulf. We are in the final stages of engineering emergency response ships that would be staged strategically throughout the Gulf, with the ability to be on site within 2 hours of an incident.

I know my time has run out, but I would ask this Committee and the members and the Chair that I have waited 17 years to be here. I talk kind of slow, and I make long movies.

[Laughter.]

Chair LANDRIEU. Go ahead. You can have 2 minutes. Go right ahead, Mr. Costner.

Mr. COSTNER. Thank you. Thank you.

Together we are fashioning a more comprehensive plan that we would like to present before the lifting of the moratorium. It would fundamentally change the world's approach to oil spill recovery, but we have not stopped there. Ocean Therapy Solutions continues to push the envelope of progress, once again footing the bill for the R&D without help from industry or Government. I believe there are other small companies out there in the private sector just like us. How do we let them in? How do we create an environment that fosters and encourages investment in critical technologies? I leave that to this body, but you should know that negotiating your way as a small business through the bureaucratic maze that presently exists is like playing a video game that no one can master. It is like trying to get to the next level that does not exist.

For me, advancing the technology for oil spill cleanup was a dream, not a business. It was not about improving my margins. I was not trying to even stay in the black. We were about trying to do something more. If we can find oil thousands of feet in the ground at depths that boggle the mind, then surely we have the technology to clean up our own mess, to find through photo imaging the giant black clouds of oil hidden, raging like death in the Gulf, posed to land on our beaches or escape to the Atlantic.

Without a doubt, the oil industry has the resources to create ships to hunt these down and drain their killing capacity. They have the technology and intellect to take this head on. We can all be about something more.

I can see that these spills are our collective problem, but they are not our collective responsibility. The economic burden falls squarely on the oil industry. For them to get over the bar of safety and pay the price is not too much to ask. It is not too much to ask for them to have to put in place the safeguards, the redundancies, and muster the sheer will to thrown an overwhelming response at the problem now and in the inevitable future. Anything less is dangerous, unacceptable, and the American people deserve better.

We have a special moment in time. We have to get this right. Forty thousand men and women in the oil industry are out of work through no fault of their own. Fishermen have been sidelined. Service industries are paralyzed. Families that have survived on the plentiful resources of the Gulf do not know the quality of life that now awaits them.

I would ask this Committee to consider the multidimensional role that this technology can play in safeguarding the water and putting people back to work. The oil industry does not have the time to evolve a plan. They have to act. This is an absolute tool. It creates inefficiency where there are no efficiencies. It represents a legitimate response to accidents that are going to happen, and it clears a path to lift the moratorium, if that is what the country wants.

We are in a fight to protect our jobs, our way of life, and an ecosystem that cannot protect itself. We can put Americans back to work and bring an entire industry into the 21st century of oil spill response. It is important to remember that when there is a spill anywhere, we suffer everywhere. Our machine represents a common ground, a common sense, and an absolute reality that we can and must protect those resources that we all share.

[The prepared statement of Mr. Costner follows:]

June 17, 2010

U.S. Senate Committee on Small Business and Entrepreneurship
"Harnessing Small Business Innovation:
Utilizing Small Business Research and Technology for Gulf Coast Oil Cleanup"

Kevin Costner
Founder, CINC
Co-Founder / Partner, Ocean Therapy Solutions, WestPac Resources

Link to video demonstration of CINC technology:
www.ots.org

Madam Chairwoman, Members of the Committee, thank you for the opportunity to speak here today and for raising this important discussion. I come before you as a U.S. citizen, and an entrepreneur with a multi-dimensional solution to the tragedy unfolding in the Gulf. Seventeen years ago I purchased a licensed patent for a centrifugal force oil-water separator from the Department of Energy's Idaho National Laboratory. I established Costner Industries (CINC) with scientists and engineers to develop a robust and portable device that would serve as the first line of defense in case of an oil spill. Today that technology is the most effective and efficient tool for cleaning up oil spills that you are probably just beginning to hear about.

It was developed for this moment. The unfolding catastrophe in the Gulf brought out this technology better than our best efforts. Despite CINC's proven demonstrations in front of oil industry and government leaders, the technology sat passively on shelves for more than ten years, powerless to fight against damaging oil spills. We are all watching the devastation in the Gulf and have the responsibility to do everything possible to clean up the massive spill. CINC has an important role to play in that process.

Introduction

The Exxon Valdez oil spill was a devastating and humbling moment for our nation. The entire world community watched in awe as the U.S., the most powerful country in the world, thrashed and capitulated, helpless to save itself from the worst environmental disaster in history. We engineered nuclear power and put a man on the moon, but somehow we could not save ourselves from oil, the most basic resource involved in almost every aspect of our daily lives. US citizens stood heroically on the beach, prepared to clean up a mess that they had no part in creating. Such epic failure was hard for me to fathom, and yet the images of rubber boots, straw and soup ladles against an endless black tide

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confirmed this utterly demoralizing display of incompetence that would continue to repeat itself.

While it's not wrong to focus so much attention on large spills, we cannot diminish the smaller spills that happen around the world every day, estimates are between 5,000 and 13,000 in a typical year. For every 1 million gallons pumped from wells, it is estimated that 20 gallons will end up in the oceans. At our current rate of oil production, that equates to an Exxon Valdez spill every 7 months.

Partly in response to the Exxon Valdez, I resolved to commit personal resources to engineer a product that would be effective in cleaning up oil spills. Like fire extinguishers, life boats, first aid kits, oil-water separators could be stationed on every boat, harbor and port where oil and water meet as standards of safety. I envisioned the machine as just that, compact and portable enough that it could be a deployed on a small craft, and rugged enough to operate reliably in rough seas. The CINC oil-water separator can do all this.

I. Early development and patent history

Taxpayers paid for the early development of a liquid-liquid separator technology, licensed and patented from the Department of Energy (DOE), and Idaho National Laboratories (INL) a government owned, private contractor operated facility, in 1993. The foundation of our CINC technology was created over 30 years ago and has been used by the Department of Energy (DOE) to recover valuable metal resources through a process of solvent extraction. Today the technology represents one of the laboratories highly successful transfers of technology, which makes the patent unique and of particular interest for the government and U.S. citizens.

Private acquisition and investment

Since 1989 and the Exxon Valdez, I had been thinking about investing in environmental solutions that could prevent the severity of similar disasters which were sure to follow. In Newbury Park, CA I was already funding research and development on flywheel technology that used magnets but it was not until I took possession of the DOE technology that Costner Industries was officially formed. My brother, Dan Costner, would go on to run the company. Dave Meikrantz, a scientist working for DOE, and the original inventor of the technology, came on board as the Director of Technology CINC.

We moved quickly to bring on a team of scientists and engineers for rapid research and development. The first two years were spent scaling up a protoype machine that processed only milliliters per minute. After that initial period of research and development we moved into production and manufacturing in Carson City, Nevada. Over time we created five commercial units with processing speeds that range from ½ gallon to 200 gallons per minute. At the

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height of our business CINC employed roughly 20 people in manufacturing and 15 sales representatives around the world.

The fact that the machine was capable of separating numerous liquid elements meant that it could be applied in diverse industries including pharmaceuticals, chemicals, metals mining and recovery, food and nutrition, biodiesel, biotech and environmental clean up. As useful as it was in so many ways, and as profitable as it could have become through diversification, I zeroed in on one singular process with immense potential.

Over the next 17 years I would devote more than $20 million dollars of my own toward developing a rugged, compact, portable machine that could separate oil from water.

As a citizen I recognized the need for this kind of technology. As an entrepreneur I seized an opportunity to fill a gaping hole where these solutions are concerned. CINC's potential lay in the ability to become the first line of defense in oil spill cleanup with the added benefit of valuable oil recovery.

II. How it works

Our separator was designed for use in oil and chemical spill clean up, oil production, remediation, nuclear waste and environmental clean up, or any application that requires the separation of two liquids with a variety of viscosities. Our technique is not hard to understand. The design is compact, portable and simple enough to be operated with minimal expertise. CINC does not use chemical or biologic agents in it's clean up process. And separation is excellent: both oil and water outputs are greater than 99% pure as opposed to skimming which at best is 20% oil, 80% water and has additional storage and onshore treatment concerns.

CINC comes in five unit sizes. The largest, a V-20, has a footprint of five square feet and weighs around 4,500 lbs. The unit fits easily onto a fishing boat, dock or other vessel where it can process oil and water, separating 200 gallons per minute.

If response is quick, the lighter components of crude oil have not evaporated and the oil still retains its product quality. Crude oil, when left to weather, will become thicker and thicker, eventually becoming the tar that washes up on beaches. For this reason, CINC units can be most efficient as a first line of defense in oil spill and recovery if they are stationed at key harbors, bays, ports, oil transport and shipping boats, and on oil rigs – in other terms, anywhere where oil can come into contact with water – oceans, lakes and rivers.

Assuming 20 V-20's had been deployed to the Exxon Valdez in the first few hours of the spill on local fishing boats, 90% of the spill could have been

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recovered in less than 1 week. CINC is at its best working as a first line of defense, gathering oil before it has a chance to stray far from the initial spill point. The cost of recovering a spill on the ocean is a fraction of the cost of cleaning up tar once it's made its way to the shore (roughly $5 million for 20 V-20s versus $4 billion for the Exxon Valdez spill).

Approximately 0.1% of the water discharged back into a spill area contains oil.

Technological obstacles

CINC centrifuges have been installed worldwide for applications in the petroleum, chemical, mining, pharmaceutical, food, fragrances, printing, and environmental industries. The centrifuge performs a wide range of separation, extraction, washing and reaction operations. Unfortunately, CINC was never fully utilized in the way I intended because of a technical obstacle, but also, and perhaps more importantly because of a lack of support from industry and the federal government.

Fifteen parts per million became the elusive bar for CINC. To prevent pollution in oceans and freshwater, EPA rules became a factor. However, we would learn, some rules do not apply in emergency situations where clean up is occurring. Obviously you cannot compare the 0.1% oil being discharged from a CINC machine to any other amount of pollution being dumped off a boat. It's a common sense calculation. And yet, this technology was not embraced by industry.

There are also examples where CINC confronted obstacles and was both flexible enough and proactive enough to overcome them. Following a demonstration in Japan we were advised that their main concerns with the centrifuge were: it's reliance on a dual power source, which was an inconvenience in certain situations; and the specific brand of skimmer used. Over the course of the next year, CINC attacked these problems. The Japanese response was positive, and yet frustratingly, immovable.

With all the modifications over the past year, such as the conversion to a single power source, and combining it with the more efficient Desmy skimmer, the Oil Spill Recovery System seems as if it would currently satisfy all the concerns that held it back from its prior approval. – Tadabumi Takasu, President of United Hi-Tech in 1998.

Despite our ability in this instance to meet the client where they stood, these efforts were not enough to promote further action by the Japanese. It was suggested that CINC continue with testing.

CINC continued to raise the bar with advancements in its design. A polyurethane casing was designed specifically for oil spill response models. This outer housing reduced the machine's overall weight by 1,000 lbs making it even more mobile and efficient for deployment in an emergency situation.

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III. Advocacy and outreach

Within the community of private sector oil spill responders responses to our equipment tended to be favorable. Indeed CINC impressed audiences across the board. Notwithstanding these positive reactions and experiences, oil spill response teams were bound by various regulatory policies and rules of testing that effectively stonewalled even the possibility of new technologies entering the market. For the purposes of their own protection, these co-ops and companies were not interested in any technology or method of cleanup that had not received the federal stamp of approval. In order to receive approval, technologies must be tested on actual spills, but the agencies charged with approval will not deploy untested equipment in a spill scenario. We were dealing with a classic and very unfortunate example of a Catch 22.

In over 45 documented cases, CINC made efforts to obtain the required certifications and grow awareness in the public and private sectors. When we were denied access to testing, CINC took on, at its own expense to demonstrate the effectiveness of our product and gain this critical access. We proved our capabilities in front of the very agencies charged with protecting and identifying new methods and solutions. The US Coast Guard, Marine Spill Response Corporation (MSRC), Minerals Management Service (MMS), NOAA, US Navy, and the EPA were all made aware of the this powerful technology that deserved a place within our arsenal of defense against oil spills.

Federal outreach and response

In 1994 CINC made first contact with Ken Bitting, Civil Engineer for the US Coast Guard (USCG). We informed USCG that we were deploying technology and wanted to get the correct certifications and requirements to do so. Dave Meikrantz, CINC's Director of Technology, then visited the Marine Spill Response Corporation (MSRC) to understand what kind of equipment they were currently working with. Over the course of the next two years, CINC and MSRC stayed in contact through various meetings, calls, and hosted demonstrations. We requested to participate in their tests and were repeatedly told that there were not enough available funds.

Buccaneer Marine was an organization with crews that would run stand-by oil recovery duty when drilling was permitted off the California Coast. Although the co-ops were formally contracted for oil spill clean up, they would call on Buccaneer in the event of a large spill. In 1995 we ran sea trials of the V-20 under "rock and roll" conditions and discussed potential joint maneuvers for future oil spills. Jim Johnston, the skipper for Buccaneer Marine, had all the ancillary equipment to support oil recovery operations and a trained crew, but was not allowed to recover oil independently without an invitation from the co-ops and USCG permission.

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The range of outreach conducted following our failed involvement with MSRC reads like an 'alphabet soup' of government agencies. Between 1995 and 1997 CINC contacted:

1. The California Department of Fish and Game to obtain their guidelines for Oil Spill Prevention and Response (OSPR).
2. Lloyd Nilsen at US Navy Systems Command, Arlington, VA. *No response.*
3. Kyle Mokelien at the Minerals Management Service. *No response.*
4. The Naval Facilities Engineering Service Center (NCEL) and provided a demonstration at Port Hueneme, CA.
5. Yuone Addasi at California Fish and Game. *No response.*
6. Joseph Vadus, Senior Advisor at NOAA. *No response.*
7. Clean Seas Official List (position sites for spills around the world). *No response.*
8. George Wilson and John Johnston, Senior VP of National Response Corp. (NRC) offering to make available V-20s at no cost in the event of a spill. *No response.*
9. All 75 solicitors entering into Basic Ordering Agreements with the US Coast Guard for containment, oil spill and hazardous clean up. *No response.*
10. J. Foster, General Counsel for the Federal Office Science & Technology Policy. Then Senate Minority Leader, Senator Tom Daschle sent the letter outlining CINC's capabilities, and requested that it be tested and considered as a powerful addition to our clean up arsenal. *No response.*

In March of 2001 I made a personal effort to communicate with the heads of EPA and the Department of Transportation. I sent letters to then agency heads, Christine Todd Whitman and Norman Mineta, respectively, explaining the extent of our centrifuge's capabilities and requesting their review and / or assistance. I emphasized that: "Unfortunately in the United States, we remain poised to respond to the next great man made environmental disaster from the same crisis mode as we did twelve years ago," adding that, "I am excited to show you [with the CINC machine] that we need not repeat history. The answer exists and it is readily available." EPA's response was noncommittal.

Hosted demonstrations for the benefit of government and industry
In addition to the phone calls, letters and general outreach that went unanswered CINC hosted numerous demonstrations for representatives of government, industry to emphasize and reinforce CINC's power and efficiency. We also presented and participated at various conferences and trade shows to elevate the profile of our product.

CINC hosted and / or presented at the following events:

1. Clean Gulf Conference, FL.
2. US Coast Guard Oil Pollution Act – 90, Kings Point, NY.

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3. International Oil Spill Show, Long Beach, CA. CINC hosted a private demonstration at our facilities, providing private bus transportation and dinner for guests. In attendance were USCG's Director of Research and Development, Ken Bitting, representatives from MSRC and UNOCAL.
4. International Ocean Conference of the Marine Technical Society.
5. Monterey Harbor demonstration for California Fish and Game and the US Coast Guard.
6. At OHMSETT, a US Navy and US Coast Guard facility in New Jersey, CINC is tested under real life oil spill conditions. Following a successful demonstration CINC hosts a dinner event in New York City.
7. US Representative Lois Capps convened a conference in Santa Barbara to discuss oil spill technology. CINC demonstrates before a variety of stakeholders in the oil industry, research institutions, and other federal agencies. "As TV cameras rolled Friday morning, the Costners and their team successfully demonstrated how the separators work. A temporary water tank was installed in the harbor's parking lot and the water was fouled with diesel fuel, which the machines then cleaned up." Santa Barbara News-Press, April 21, 2001. Government representatives in attendance were: Lt. Graves, USCG; J. Lisle Reid, Regional Director, Mineral Management Service; and Heather Parker-Hall, NOAA representative.
8. Terminal Island, CA, test performed for US Coast Guard Task Force for Contingency Planning. EPA, MMS, FEMA, Fish and Game, and the California Coastal Commission were all in attendance.

In not one single instance did we receive a follow up response to these successful demonstrations. It was frustrating to know how to move forward. We were told the machine had to be proven and tested. When we were denied the opportunity to participate in those tests, we did demonstrations of our own, in an effort to claim the attention we felt we rightly deserved. We earned the respect and of our audiences wherever we went, and yet still were denied any real support. It was extremely difficult for us to know how to move forward doing business in the US.

International use and response

For ten years CINC went about targeting international governments and private entities involved in oil or hazardous spill clean up, in much the same way as we did in the US. In many instances we offered use of our machines at no cost wherever oil spills were happening around the world. Despite these efforts we were mostly denied a response from the following entities:

1. Canadian Marine Response Management Corp. responsible for oil spill services and equipment and Larry Wilson of the Canadian Government. *No response.*
2. Oil spill offices in: United Kingdom, Netherlands, Sweden, Italy, France, Germany, India, Australia, Denmark, USSR, Japan.

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3. Autralian Emergency Services (AES) and Hartec Systems Anchorage were contacted and offered our equipment and assistance in cleaning up the Komi spill. *No response.*
4. Offered clean up assistance to Marius Mes of Phillips Petroleum of Norway. *No response.*
5. Offerned equipment for a spill in Wales, to the Oil Spill Response Lim. And Joint Response Center. *No response.*
6. Peter Oosterling, General Manager of Shell International, The Hague. *No response.*
7. Test performed in Kuala Lampur, Malaysia for the Deputy Prime Minister. CINC transported a V-10 unit and had a successful demonstration. *No response.*

In 1997 we airlifted a V-20 CINC unit to Japan to aid the oil spill clean up caused by a cracked Russian tanker. Although severe weather kept us off the sea, the effort did demonstrate our unit's mobility.

In addition to separating oil and water, CINC centrifuges have been used extensively in oil production. CCS and ET&T are two mid-stream contractors working for US oil manufacturers that have experience with CINC machines. In fact, ET&T bought the first V-16. We also know that a Dutch oil processing company has been using CINC's for this purpose.

Business repositioning

We jumped through every hoop that we encountered, but without key institutional support or regulatory action, we didn't have any buyers, and thus, the market was nonexistent. I had to suspend my intentions for the oil-water separator and the company went on to diversify into other markets including pharmaceutical and chemical centrifuges.

Ocean Therapy Solutions was born to provide global solutions for oil recovery. OTS utilizes the CINC centrifuge and will incorporate nanotechnology developed by UCLA to produce oil-water output of less than 15 ppm. OTS is currently working in concert with the Parishes of Louisiana. BP has just contracted with us to deploy 32-37 of the CINC machines into the Gulf, some of which are currently over the top of the drill site.

My passion and desire to succeed with CINC never waned. Roughly 10 months ago, Pat Smith from OTS began working with Eric Hoek from UCLA on developing the next stage of Centrifuge technology. The goal was to design a nanotechnolgy filtration system that would be coupled with the Centrifuge device in order to achieve less than 5ppm oil in water when discharging water back into the ocean. Hoek and his students worked tirelessly in the lab and were successful in achieving this goal of < 5ppm.

Again with private resources and no institutional support I found myself pushing

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this technology uphill because I believed in its potential.

Although further funding is needed to develop these membranes into a commercially viable application, the technology now exists to couple the centrifuge and this filtration system allowing oil and water to be extracted from the ocean and the water replaced at a purity level of 99.999%. This is a major breakthrough.

Over the past month, the world has begun to understand the reasoning behind oil-water separators and how these could function in an industry badly in need of reform. Not only does our machine separate oil and water at the source of the spill, it operates in hostile environments and can handle a variation of oil viscosities including emulsified, aged and oil filled with dispersants without the aid of chemicals. That means, we don't pollute at all during clean up.

Legislative needs

The government agencies and entities mentioned here should not be singled out for their indifference. Between 1994 and 2004 we contacted every major oil company in the US in an attempt to gain their awareness and support for a technology that could both protect them and the environment in the event of a spill. The most apt word to characterize these interactions was apathy. Simply put, the need for such technology was not recognized at the time we brought this product to market. Now the whole country and the world will recognize the need for preventative spill clean up technology. I am saddened by the disaster that has brought this conversation to bare and also happy to see our technology finally have the chance to take center stage in providing high quality environmental solutions.

Our President has made clear that he does not want to put Americans out of work, but the moratorium on oil drilling is now moving supply rigs overseas to foreign territories. Our President's main concern, as I understand it, is to keep Americans out of harm's way, by not allowing them to work in unsafe environments. CINC machines stand ready to be deployed for immediate clean up, but they also provide the unintended benefit of putting people back to work.

If legislated as a safety standard, CINC machines would be like fire extinguishers for the oil industry, to be kept close at hand wherever oil and water have the opportunity to come into contact. Like any other emergency device, the hope is that you never have to use it, and yet it is reliably there when you need it. CINC machines provide a safety assurance such as the oil industry has never seen. Their effectiveness remains unmatched by any comparable technologies in the past thirty years. In putting CINC to work, we have a situation where regulation can be very good for business – putting rig safety operators back to work, in a safer environment, with American made machines.

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In our experience with the "clean up" industry and government regulatory agencies responsible for protecting our environment and the public, we have learned that interest in any sort of solution is event driven, piecemeal, and reactionary. Following each major disaster there is a frantic search for tools and answers, but its always too late. This is a great failure of our system because we do not have solutions available when we need them the most. Fortunately, we have a solution that is readily available to set things right in the Gulf beginning tomorrow if we make that decision.

It is important to note that my company is independent from the oil industry. There's no guarantee of government support behind us, not now or ever before. Its important to remember that there are others out there now, putting private resources toward meaningful solutions for catastrophes we have not even begun to imagine. How do we allow them in? How do we create an environment that fosters and encourages investment in critical technologies? Our government should be seeking these people out, not standing in their way.

Conclusion

We are all at fault here. It's just too easy to blame BP. It took oil for me to fly here and it will take more oil to solve our problem. What we need to do now is come together. What I can provide is a technology that is available immediately, a technology that will allow rigs to resume operation and to put people back to work. Every day we wait to deploy we lose more wildlife, coral reefs and our way of life.

U.S. Coast Guard commanders have used terms such as, "under assault" to describe conditions in the Gulf. They have it right that this is a war to be waged with all the tools, methods, and techniques we have at our disposal. Since the last great debacle, the Valdez spill, there has been too little institutional effort devoted toward defining, identifying and qualifying the best "tool chest."

I heard it stated that throughout the 19th and 20th Centuries, each time America has been compelled into war, we begin fighting it with the methods, tactics, equipment and technologies used in the last war. I believe that statement to be not only poignant but also accurate to events unfolding in the Gulf.

We have the opportunity to provide the American public a solution to the Gulf oil spill and to tell the story that demonstrates the power of combining government resources with private ingenuity. I have always been known for being direct and to the point, keeping the big picture always on the horizon. We are all in this together, struggling with a crisis that requires immediate action. I truly believe that after nearly 20 years of personal development, the solution I have laid before you is by far the best option we have to repair the existing damage and prevent future catastrophic oil disasters, both in the Gulf and wherever protection is needed.

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Thank you for this opportunity to speak today. As an entrepreneur, a pragmatist, and a US citizen I am committed to ensuring a positive environmental legacy for the Gulf and all waters around the world.

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Chair LANDRIEU. Thank you very much, Mr. Costner. You have been a hero on the screen, and let me say you are being a hero right now in real life, and we, particularly those of us along the Gulf Coast, so appreciate your balanced approach, your ability to represent not just your own company but thousands of businesses that, as Ms. Baird said, have been extraordinarily frustrated knowing they may have the solutions, but not being called on. I really sincerely appreciate the extraordinary effort that you are making, and others.

Let me ask you this: You described this to me previously, but I would like you to describe publicly what happened when you went some 10 years ago to the offshore oil expo in Houston. Could you talk about that experience when you were excited about your machine and who you presented it to and what happened?

Mr. COSTNER. Well, we had started by introducing the machine to all the oil companies, to the Coast Guard, to all the different agencies responsible for protecting the waters and got kind of the silent treatment. We then began to go to the expos where there—these are demonstrations where all the equipment that is designed to actually protect us in oil spills—booms and fancy helicopters and things like that—all occur. But the idea that there was some machine that would actually take the oil out of the water, I did not see anything.

A very interesting story happened. My partner, John Houghtaling, actually went to Billy Nungesser in New Orleans at one point and said, "I want to say something to you. I kind of have a crazy idea. It is an actor with kind of a magic machine." And Billy Nungesser said, "Wait. Do not say a no word." He said, "Before I was a politician, I was an oil man, and I saw that machine in Houston, and I know it works. Would you please call him for me?"

So I have been to the agencies, and it is in my written testimony who I have been to. And it is a process, and so is life. And I have lived it, and I thank you for bringing the light of day to my company by inviting me here.

Chair LANDRIEU. Well, and it should not be that hard for any company. Ms. Baird, I would like you to testify just briefly about your first experience, which was not just a few weeks ago, or your company's first experience with trying to present to the Federal Government a technology that might work even before this spill. Do you want to add anything to your testimony about that?

Ms. BAIRD. I think that the thing to understand about our microbial solution is that the first open water application—this was back in 1990 when the tanker Mega Borg exploded off the—about 57 miles off the coast of Galveston. And it was at that point that the State of Texas really kept a close eye on us and watched as we were able to remediate damage in the Gulf from crude oil back then. It was at that point that we were placed on the EPA contingency product plan and have remained there ever since.

I think that the challenge that we faced is understanding which Government officials we should be meeting with. We, too, have been with Billy Nungesser down in Plaquemines Parish, and we have been with so many other fantastic and supportive Government agencies since then. I really think that everyone feels as

though their hands are tied and no one wants to spend constituent tax dollars, you know, with the hope that BP is going to pay back. And I think that that has been one of the challenges that we have faced.

Chair LANDRIEU. We have got to break through that barrier.

Mr. Parker, you represent a small business. I want to give you an opportunity. There was some lengthy testimony so you do not have to repeat it, but on the comment of when you first approached the Federal Government with technology—and you have several technologies, so you can pick just one. Why don't you think they have accepted some of the things that you have presented to them?

Mr. PARKER. We started 12 years ago with the Federal Government going to RRT meetings. I think that their agenda is—sometimes what we do is not as important to them. You know, when the Space Shuttle Columbia went down, these RRTs have to deal with those things. When Katrina came through, they have to deal with it. Sometimes oil spills just are not priorities. And we have tried for 12 years to get pre-authorization. We have successfully gotten pre-authorization in three of the regions: the Caribbean, Region 3, Region 4, and recently since this bill, Region 6. But they have so much on their plate, and unfortunately, the folks that have to make the decision may not want to make that decision because they have to sign a document. And when they sign those documents, they are liable for those decisions. And they have put us through hell to try to get these technologies out.

We have been one of the few vendors that have been successful at a lot of cost and a lot of time away from home and just a lot of struggles. But they are good folks. They just have a lot on their plates, and we do not know the reasons why we are not at the NRT level with all of technologies. Why do we have to go to each individual RRT meeting two times a year, 13 different ones, and spend money just to preach the same story every time? I do not know the answers.

Chair LANDRIEU. Okay. I am going to recognize Senator Snowe in a minute, but my final comment is really for you, Admiral. Unfortunately, I am now a veteran of disasters, representing a state that has been hit now by two extraordinary disasters. We were just recovering from Katrina and Rita. And what I witnessed close up in this contractor response, sometimes contractors—not all, but many of them are interested in making money in the wake of a disaster as opposed to serving the public. I can appreciate private businesses' efforts to make profit. But if these small businesses have to go to contractors who, on the one hand, could make lots of money using old technology that does not work or make a lot less money using new technologies that do work, what do you think they might do?

The American people deserve a Government that will fight for them, regardless of whether a profit is to be made or not. I sure hope the Coast Guard can step up to this job.

Senator Snowe.

Senator SNOWE. Thank you, Madam Chair, and I want to thank all of you for your testimony here today. Sorry for the incredible hardships that you have confronted along the way in terms of getting your technologies or your products approved during this monu-

mental time in our nation's history. I think that is what is so tragic about all of this. I think most critically now is how best to remedy the situation that we find ourselves in, either procedurally or otherwise, to make sure that your technologies, your products get the attention that they deserve, and certainly at a time in which we should be maximizing the level of urgency in terms of delivering the resources necessary.

So let me start with you, Mr. Smith, from your vantage point as an academic, and you are very familiar with the previous efforts. I find it stunning—I think we all do—that since Exxon Valdez we have failed to shape a contingency plan under any scenario, let alone a worst-case scenario. Regrettably, BP submitted a plan, its exploration plan of the worst-case scenario being 162,000 gallons a day. Obviously it is now up to 2.4 million gallons a day, so it is an Exxon Valdez every 4 days. So here we are.

What would you recommend? From your position what can we do here and now? I want to go down the line here, because it is really important for us. It is an emergency, and it is urgent. We feel the desperation—of course, the Chair, who lives there in Louisiana, but I know every American is just wanting to do something. What can we do in Congress either to revamp this process—because clearly there is no single, synchronized, streamlined process that needs to be developed so that these technologies and products get the attention of the United States Government. I do not expect to relegate or subjugate the responsibilities in our public interest to a company. They have got their own objectives and goals. We have ours, which is the national interest. And that is what we have to deliver now.

Thank you.

Mr. SMITH. Well, I think you have hit the nail on the head there. Before I was an academic, I spent 30-odd years in this industry, sometimes trying to sell new ideas to oil companies, sometimes on the buy side. But the major issue is one of credibility. You have got a long supply chain to support any of these drilling efforts. This field, if it had been successfully developed, would have cost upwards of $2 billion to bring online. People trust certain suppliers. They have prior experience, precedent with those suppliers. And it is extremely hard, as I said, during normal times to bring a new supplier into the chain. During an emergency it is virtually impossible.

What I think the Government could do in a case like this is to sort of short-circuit that system and perhaps screen these ideas quickly, find the ones that were winners, and get those publicly supported so that when there is a list of 14 suppliers, it is not just a matter of picking Nalco because that is the one you have always picked. There is more direction, more focus. I rarely end up defending the EPA, but I would say that in the case of the issue you had raised about Corexit, BP did write a response to that directive to Lisa Jackson, and in that response the comment was, "It is great. We would love to use the other material. There is just simply not enough supply to do anything with."

Another thing the Government could do is say, well, this is a supply item that we should have available. It does not have to sit in the Government inventory. I mean, the skimmers you were talk-

ing about earlier, and Senator Levin was talking about, those pieces of equipment exist because the NRC was created at the strong suggestion of the Federal Government after one of the earlier spills. The reason we had 28 skimmers available was because they were directed to be built and financed by the oil companies.

Senator SNOWE. I think that is something that we have to do in the future and having a contingency with a warehouse with certain products and technologies available to deploy.

Mr. SMITH. I think that is absolutely correct.

Senator SNOWE. Mr. Parker, from your experience? I know you have been approved, as you mentioned, in four regions. Is that correct?

Mr. PARKER. Yes, ma'am.

Senator SNOWE. Regional response areas?

Mr. PARKER. Yes.

Senator SNOWE. So not Louisiana, but Alabama——

Mr. PARKER. Well, Louisiana just recently——

Senator SNOWE. Just recently.

Mr. PARKER. Just recently. It usually has taken us about 7 years per region consecutively. It should not take that long. I mean, it is a very simple product. It has been proven. It has been around since 1994, so it should not have to happen. The things that we feel that need to be done, you are right, there is a document called the Selection Guide that was written by Region 3 and Region 4 and the Coast Guard which does look at all these products, which they do examine and they put them through the ARTES process. I think some funding to revamp the Selection Guide and make it a living document more so than it is today would help because these are scientists that actually know what they are doing, and they can take these 23,000 products and put them through the testing that they need to be put through, improve them, and publish their performances and whether they are good or bad. It is a great document. It is available to everyone online, and I think that should be brought back to life, especially in light of what has happened today.

Senator SNOWE. Those are good suggestions. Thank you.

Ms. Baird, from your difficult situation, I would like to also ask you how much have you spent so far in trying to get, you know, your product approved.

Ms. BAIRD. Just in the last 59 days, thousands and thousands of dollars in travel expenses, expenditures, phones, you know, we average probably 80 phone calls a day per executive team member. The biggest problem is the time required to chase down each person. I mean, as you can probably attest, just to get through to each Senator takes so many levels of discussion with so many other stakeholders. You cannot even imagine the kind of time this has required of our firm, and this, of course—we have ceased all other business in an attempt to do what we know is the right thing to do.

And think about this: We are on the EPA list and we are approved by most Gulf Coast states, and we are going through this. I cannot imagine someone with an innovative idea that is not already on these lists.

So I think I agree with the points that this panel has made, which is that there really should be some sort of a fast-track ap-

proach so that, you know, people that have gone through this vetting process are not left just out by themselves.

Senator SNOWE. Excellent. Excellent suggestion. Sorry you are going through it. I can only imagine the difficulty in all that.

Dr. Mitchelmore.

Dr. MITCHELMORE. Thank you. For companies to have their dispersants considered, obviously they need to have toxicology tests so that they would be considered as suitable dispersants. However, we need to make sure that these tests are scientifically robust and that the companies are not going to testing facilities that are not giving them accurate and reliable and defensible data. And these tests should also be expanded to include other tests that may be able to give us some better information as to the longer-term effects of using dispersants and dispersed oil.

And, indeed, in the whole realm of looking at the effects of dispersed oil, numerous recommendations were made by the National Research Council in 1989. I was on the panel in 2005 that also looked at these dispersant issues. And it was surprising that even 16 years after the first report, some of the same recommendations regarding toxicity issues and other issues pertinent to dispersant use were still being recommended even with that 16-year data gap.

So I would like to highlight that the recommendations in both of the NRC reports are actually looked at and future opportunities are made to be able to address these basic uncertainties and data gaps concerning dispersant use.

Senator SNOWE. Thank you, because I know there are extensive knowledge gaps, as you suggested and recommend in that report.

Mr. Costner, I know you were rejected around 45 times by various Federal agencies over the course—was it 17 years or the last 10 years?

Mr. COSTNER. I stand by all those numbers.

[Laughter.]

You know, I would like to say that I do not know how to solve that problem of committees. I do not work very well in committees. I work well with others, but I am not sure.

I would say that my company over the last months has spent well over $1 million holding our breath to get that phone call that I did not think would ever come.

What I would recommend, if I could, what I would demand, if I could, and I can do neither, so what I would beg—what I would beg the leaders in this country and the oil industry together would be, before you lift the moratorium, before you do that, to please have cleanup technology in place or at least on a way in a specific time that is designed to meet and match with full force the worst-case scenario that can be presented to us.

Senator SNOWE. Great idea. Absolutely right on point. All of you, thank you. That is absolutely right, each of you, and I thank you.

Madam Chair, I would like to submit for the record from the EPA, in fact, on the surface application dispersant, they did send a directive on May 26th that BP shall eliminate the surface application of dispersants.

Thank you.

Chair LANDRIEU. Thank you. That will be submitted to the record.

Senator SNOWE. Thank you all.
[The information follows:]

FROM EPA:

May 26, 2010

Dispersant Monitoring and Assessment Directive - Addendum 3

Reduction in Use of Dispersants. BP shall implement measures to limit the total amount of surface and subsurface dispersant applied each day to the minimum amount possible. BP shall establish an overall goal of reducing dispersant application by 75% from the maximum daily amount used as follows:

a. Surface Application. BP shall eliminate the surface application of dispersants. In rare cases when there may have to be an exemption, BP must make a request in writing to the FOSC providing justification which will include the volume, weather conditions, mechanical or means for removal that were considered and the reason they were not used, and other relevant information to justify the use of surface application. The FOSC must approve the request and volume of dispersant prior to initiating surface application.

b. Subsurface Application. BP shall be limited to a maximum subsurface application of dispersant of not more than 15,000 gallons in a single calendar day.

Application of dispersant in amounts greater than specified in this Addendum 3 shall be in such amounts, on such day(s) and for such application (surface or subsurface) only as specifically approved in writing by the USCG Federal On-Scene Coordinator (FOSC).

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Chair LANDRIEU. They have just called a vote, so we are going to have to wrap up this hearing, and I thank you. But on one final point, I want to ask the panelists to submit for the record—and you will receive this in writing from us, and the Coast Guard as well. Are the five categories clear enough and appropriate enough—one, oil-sensing improvements to response detection; two, oil well control and submerged oil response; three, traditional oil spill response; four, alternative oil spill response; five, oil spill damage assessment. If I were a small business and had a technology as described, I am not sure what category I would apply to. This could potentially be a first step. Get these categories clear, get them transparent, expedite the process so that the best technologies in America and around the world can be applied to a war that is being waged every day in the Gulf Coast.

The meeting is adjourned. Thank you.

[Whereupon, at 12:03 p.m., the Committee was adjourned.]

APPENDIX MATERIAL SUBMITTED

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United States Senate
Committee on Small Business and Entrepreneurship

Hearing entitled
"Harnessing Small Business Innovation: Navigating the Evaluation Process for Gulf Coast Oil Cleanup Proposals"

June 17, 2010

Responses to Questions for the Record
to Rear Admiral Ronald Rabago, United States Coast Guard

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Question#:	1
Topic:	review
Hearing:	Harnessing Small Business Innovation: Navigating the Evaluation Process for Gulf Coast Oil Cleanup Proposals
Primary:	The Honorable Roger Wicker
Committee:	SMALL BUSINESS (SENATE)

Question: What is the process for ensuring that Gulf Coast-based suggestions receive fair review and consideration by the review teams?

Response: On June 4, 2010, the Coast Guard Research and Development Center (RDC) published a Broad Agency Announcement (BAA) defining the federal government's Interagency Alternative Technology Assessment Program process. This process provides an equitable, well-defined and systematic government-managed process to solicit, screen, and evaluate all suggested technologies in support of ongoing response activities related to the Deepwater Horizon spill.

All submittals are evaluated by a Technical Evaluation Team made up of personnel from the Coast Guard and other government agencies. Submittals are screened solely against the evaluation criteria set forth in the BAA, which are: 1) overall scientific and technical merit, 2) feasibility, 3) availability, and 4) rough order magnitude cost.

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Question#:	2
Topic:	deadlines
Hearing:	Harnessing Small Business Innovation: Navigating the Evaluation Process for Gulf Coast Oil Cleanup Proposals
Primary:	The Honorable Roger Wicker
Committee:	SMALL BUSINESS (SENATE)

Question: What are the internal deadlines for review of ideas, products, services and responses to the submitters? What is the longest time you anticipate a company or individual will have to wait for a response or follow up?

Response: When an idea is submitted to the Interagency Alternative Technology Assessment Program, the submitter immediately receives an electronic receipt-acknowledgment response, which includes instructions on how to track the status of their idea on-line. Submitters also receive electronic notifications as their idea progresses through the evaluation process. The length of time required to review each submission varies widely depending on such factors as quality of the information submitted and complexity of the idea. The goal is to make an initial determination within ten days of receipt on whether the submission:

(1) Has a potential for immediate benefit to the spill response effort;
(2) Needs more detailed investigation or evaluation; or
(3) Does not support this event.

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Question#:	3
Topic:	access
Hearing:	Harnessing Small Business Innovation: Navigating the Evaluation Process for Gulf Coast Oil Cleanup Proposals
Primary:	The Honorable Roger Wicker
Committee:	SMALL BUSINESS (SENATE)

Question: Do you believe the Coast Guard and other federal entities involved have full access to all suggestions, products, and services proposed to BP for review, and how are you ensuring that is the case?

Response: Although the BP idea evaluation process and the Interagency Alternative Technology Assessment Program (IATAP) are independent of each other, the Coast Guard does have full access to the ideas submitted to BP. Additionally, suggestions submitted to BP that progress to an enhanced evaluation stage are shared with the Coast Guard Research Development Center (RDC) staff for technical review and input. The RDC staff also routinely queries the BP submittals to determine if there are technologies the government is not aware of, or if there are other technologies similar to the ones that the IATAP team is assessing.

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Question#:	4
Topic:	process
Hearing:	Harnessing Small Business Innovation: Navigating the Evaluation Process for Gulf Coast Oil Cleanup Proposals
Primary:	The Honorable Roger Wicker
Committee:	SMALL BUSINESS (SENATE)

Question: Explain the review process, including how situations are resolved if BP and the Coast Guard arrive at different decisions whether or not to pursue an idea for assistance. Who makes the final determination as to whether or not it will be utilized?

Response: The Federal government's review process is defined in the Broad Agency Announcement released on June 4, 2010. Ideas submitted to the Interagency Alternative Technology Assessment Program (IATAP) with scientific and technical merit and that are available and feasible are forwarded to the Unified Area Command (UAC), which includes both the Coast Guard and BP, for operational consideration. The UAC evaluates the operational requirements, and gaps in existing capabilities among other factors to determine whether or not to implement the technology.

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Question#:	5
Topic:	conflict
Hearing:	Harnessing Small Business Innovation: Navigating the Evaluation Process for Gulf Coast Oil Cleanup Proposals
Primary:	The Honorable Roger Wicker
Committee:	SMALL BUSINESS (SENATE)

Question: Have there been instances of conflict between BP and the Coast Guard on these decisions prior to the implementation of the IATAP and how were they resolved? What will be the process for ensuring that they will be re-reviewed through the IATAP process?

Response: There have been no known unresolved issues between the Coast Guard and BP related to the review of spill response technologies.

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Question#:	6
Topic:	questions
Hearing:	Harnessing Small Business Innovation: Navigating the Evaluation Process for Gulf Coast Oil Cleanup Proposals
Primary:	The Honorable Roger Wicker
Committee:	SMALL BUSINESS (SENATE)

Question: If the Coast Guard has questions regarding submissions, how are those questions communicated to the submitter?

Response: Submitters are required to provide contact information as part of the submittal process. If the Interagency Alternative Technology Assessment Program evaluation team has questions, they can and will contact the submitter directly via that information.

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Question#:	7
Topic:	useful
Hearing:	Harnessing Small Business Innovation: Navigating the Evaluation Process for Gulf Coast Oil Cleanup Proposals
Primary:	The Honorable Roger Wicker
Committee:	SMALL BUSINESS (SENATE)

Question: If an idea, service, or product is not feasible or useful for the clean-up effort, how is the submitter informed and how long will that process take?

Response: Before a final determination is made on any submittal, at least two people must review and assess the idea. If the idea does not support the current response efforts, then the submitter receives an electronic notification to that effect. The length of time it takes for this notification varies depending on a number of factors, to include at what stage in the evaluation process the determination is made. During the initial screening stage, ideas with potential to support the response effort are processed first. Notifications are processed in this fashion to expedite those with the most merit.

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Question#:	8
Topic:	tracks
Hearing:	Harnessing Small Business Innovation: Navigating the Evaluation Process for Gulf Coast Oil Cleanup Proposals
Primary:	The Honorable Mary L. Landrieu
Committee:	SMALL BUSINESS (SENATE)

Question: There are two (2) different tracks that businesses can follow if they have technologies that may help Gulf Coast cleanup efforts: the Federal evaluation process or BP. In your testimony, you mention that the Federal government has received almost 1,300 submissions and 70 have completed the initial screening process. Recent news reports indicate that BP has received over 35,000 proposals with only four in the testing phase.

For the committee record, as of today how many proposals have been deployed into the Gulf of Mexico from the Federal government review process?

How many are in the testing or final stages of review?

As I mentioned, BP has about four proposals in the testing phase. Do you know how many have been deployed to date?

Is there a specific timeframe that you can provide on when one of the technologies in Federal testing process may be deployed into the Gulf of Mexico?

Response:

- *How many proposals have been deployed into the Gulf of Mexico from the Federal government review process?*

We have received over 3,700 submissions from the Broad Agency Announcement (BAA) and over 3,500 have completed the initial screening process. As of July 21, 87 submissions have been forwarded to the on-scene coordinator..

- *How many are in the testing or final stages of review?*

As of July 21, 2010, there were 28 ideas being evaluated in more detail by the IATAP subject matter experts to determine the ideas' efficacy based on the IATAP evaluation criteria published in the BAA.

- *As I mentioned, BP has about four proposals in the testing phase. Do you know how many have been deployed to date?*

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Question#:	8
Topic:	tracks
Hearing:	Harnessing Small Business Innovation: Navigating the Evaluation Process for Gulf Coast Oil Cleanup Proposals
Primary:	The Honorable Mary L. Landrieu
Committee:	SMALL BUSINESS (SENATE)

As of July 18th, BP informed Unified Area Command that they have approximately 400 ideas which have progressed to an extended evaluation phase with the potential for field testing. Thus far, some 40 field tests have been initiated, 17 ideas successfully completed field testing. Of these 17 ideas, 11 were recommended to the response team for application as part of the response effort. The remaining 6 ideas have not yet been recommended to the response team for potential application in the response effort.

- *Is there a specific timeframe that you can provide on when one of the technologies in Federal testing process may be deployed into the Gulf of Mexico?*

There is no specific timeframe for deploying the technologies into the Gulf, but we are working as fast as possible to complete the IATAP reviews and operational assessments so that effective technologies can be deployed to mitigate the effects of the spill.

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Question#:	9
Topic:	response
Hearing:	Harnessing Small Business Innovation: Navigating the Evaluation Process for Gulf Coast Oil Cleanup Proposals
Primary:	The Honorable Mary L. Landrieu
Committee:	SMALL BUSINESS (SENATE)

Question: You mentioned in your testimony that your review is focused on providing submitters with a timely response upon the receipt of their proposal. Our Committee has received feedback from small businesses have been frustrated in getting through to the Coast Guard and in getting word back on proposals.

What is the timeline for a response on whether a proposal is: 1) feasible; 2) not feasible; or 3) needs further technical review?

Response: The length of time required to review each submission varies depending on such factors as quality and depth of the information submitted, and complexity of the idea. The goal is to make an initial determination within ten days of receipt on whether the proposal:

(1) Has a potential for immediate benefit to the spill response effort;
(2) Needs more detailed investigation or evaluation; or
(3) Does not support this event.

Notifications back to the proposal's submitter are processed in this order so that Interagency Alternative Technology Program (IATAP) can take action on ideas with the most merit in an expeditious manner.

Question: Is there an "internal timeline" when decisions need to be made or companies are notified of a final decision?

Response: The process timeline, or goal, is to make an initial within ten days of receipt on whether the idea;

(1) Has a potential for immediate benefit to the spill response effort;
(2) Needs more detailed investigation or evaluation; or
(3) Does not support this event.

Final determinations and notifications will take longer to process depending on numerous factors including the quality of the information submitted and complexity of the idea.

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Question#:	9
Topic:	response
Hearing:	Harnessing Small Business Innovation: Navigating the Evaluation Process for Gulf Coast Oil Cleanup Proposals
Primary:	The Honorable Mary L. Landrieu
Committee:	SMALL BUSINESS (SENATE)

Question: Are businesses notified what category they are in during the review process and why they are in that category? (Yes/No)

Response: Businesses select a category for their idea as part of the submission process. However, after initial screening, the IATAP evaluation team will process the proposal under the appropriate category.

Question: Can you briefly outline for small businesses watching this hearing the different stages of review from start to finish?

Response: The IATAP review process is defined in the Broad Agency Announcement (BAA). The specific language from the BAA reads as follows:

> All submitted White Papers meeting the requirements of this BAA are reviewed and evaluated as they are received. Each White Paper undergoes an initial screening. The initial screening results in a determination that either (1) the White Paper has a potential for immediate benefit to the spill response effort, (2) the White Paper submission needs more detailed investigation or evaluation and will be forwarded to the appropriate Government Agency overseeing that portion of the Deepwater Horizon Response (EPA, MMS, NOAA, or USCG), or (3) the White Paper submission does not support this event. A Contracting Officer provides a response to all properly submitted White papers identifying the initial screening determination.
>
> With regard to Item (1), if it is determined that the White Paper has a potential for immediate benefit to the spill response effort, the White Paper is forwarded to the Federal On-Scene Coordinator (FOSC) for further action under its authority. Further action may include contract actions by the responsible party (i.e. non-Governmental entity) or other federal agencies.
>
> With regard to Item (2) above, if it is determined that the White Paper submission needs more detailed investigation or evaluation and it is forwarded to the appropriate Government Agency overseeing that portion of the Deepwater Horizon Response (EPA, MMS, NOAA, or USCG), that Agency will be responsible for any further action. The Agency may request additional information including a request for proposal. Offerors shall comply with the respective agencies' rules and regulations.

Additionally, once the IATAP review is complete, white papers are forwarded to the Unified Area Command (UAC) for consideration, then undergo an assessment based on

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Question#:	9
Topic:	response
Hearing:	Harnessing Small Business Innovation: Navigating the Evaluation Process for Gulf Coast Oil Cleanup Proposals
Primary:	The Honorable Mary L. Landrieu
Committee:	SMALL BUSINESS (SENATE)

their operational requirements, gaps, and existing capabilities to determine the technologies' feasibility for implementation in the current spill response effort. The UAC then makes the final determination on whether or not to implement the idea.

Question: In your opinion, how many responses does the Coast Guard handle in a given day?

Response: Initially the IATAP was receiving approximately 800 submittals per week, but is currently averaging approximately 200 submittals per week.

Question: Are they via e-mail, phone or some other method?

Response: In accordance with the BAA, all submittals must be made electronically through the link provided in the BAA announcement. Submittals received via other means are notified of the correct process and are provided with directions in accordance with the BAA.

Question: Does the Coast Guard have the ability to issue a contract immediately if a 'silver bullet' white paper comes across your desk? (Yes/No)

Response: The IATAP does not exercise contract authority. Once ideas are evaluated thru the IATAP process, ideas with merit are then forwarded to the UAC for operational evaluation and implementation, as appropriate.

Question: Are there any recommendations you can provide on how we might be able to expedite the process for such proposals or for technologies that could immediately be deployed into the incident area?

Response: There are no current recommendations for expediting the process for reviewing and implementing new technologies. Trends indicate the IATAP process timelines continue to improve, and the process is continually analyzed to identify and mitigate choke points.

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Question#:	10
Topic:	patents
Hearing:	Harnessing Small Business Innovation: Navigating the Evaluation Process for Gulf Coast Oil Cleanup Proposals
Primary:	The Honorable Mary L. Landrieu
Committee:	SMALL BUSINESS (SENATE)

Question: Our committee and other Senate offices have received many phone calls and e-mails from small businesses that believe their technologies may be able to help with the oil spill. These businesses are at different stages of developing their technology, and so some do not yet have patents on them.

Does the Coast Guard have any policies in place to help these small businesses in protecting their ideas?

Response: The submittal information is closely controlled, and all individuals that participate in the Interagency Alternative Technology Assessment Program (IATAP) review process or that have visibility of the submittals must sign a non-disclosure agreement. However, due to the multiple-agency membership of the IATAP as well as the government and non-government members of the Unified Area Command, we require broad authorities to expeditiously distribute the submittals. Without these authorities, the review and implementation timelines would be significantly delayed. Therefore, the Broad Agency Announcement (BAA) addresses proprietary issues with the following language:

> White Papers shall provide technology ideas/solutions to support the five technology gap areas identified above. Offerors are hereby notified that it is highly likely that White Papers may be shared with several different Government agencies and other interested parties (which may include contractors) for review and consideration.
>
> ALL WHITE PAPERS SUBMITTED TO THIS BAA MUST ALLOW UNLIMITED DISTRIBUTION BY THE GOVERNMENT (EXCLUDING ROUGH ORDER OF MAGNITUDE (ROM) [COST] PAGE).
>
> The White Paper shall contain the offeror's copyright notice with the following license: The Government is granted a paid-up, nonexclusive, irrevocable, worldwide license in this White Paper to reproduce, prepare derivative works, distribute copies to the public, and perform publicly and display publicly, by and on behalf of the Government.
>
> Alternatively, the offeror may choose to make the White Paper non-proprietary and mark it accordingly. However, more restrictive markings than that set forth above are not acceptable as the White Papers are to be broadly distributed, given

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Question#:	10
Topic:	patents
Hearing:	Harnessing Small Business Innovation: Navigating the Evaluation Process for Gulf Coast Oil Cleanup Proposals
Primary:	The Honorable Mary L. Landrieu
Committee:	SMALL BUSINESS (SENATE)

the numerous parties (Government and private) that are engaged in the Deepwater Horizon Response effort.

Absent any proprietary marking, the White Paper will be presumed to be non-proprietary exclusive of the ROM.

Question: Are there any incentives that your agencies have to encourage individuals that do not currently have intellectual property protection to submit their proposals?

Response: No. There are no specific incentives, but the submittal information is closely controlled. All individuals that participate in the IATAP review process or that have visibility of the submittals must sign a non-disclosure agreement.

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Question#:	11
Topic:	OPA
Hearing:	Harnessing Small Business Innovation: Navigating the Evaluation Process for Gulf Coast Oil Cleanup Proposals
Primary:	The Honorable Mary L. Landrieu
Committee:	SMALL BUSINESS (SENATE)

Question: In your testimony, you mention that the Oil Pollution Act (OPA) of 1990 and other regulations guide the Coast Guard's response to oil spills.

Does OPA specify requirements/criteria for Federal review of clean up proposals? (Yes/No)

Response: No.

Question: If not, how are Interagency Alternative Technology Assessment Program (IATAP) criteria established?

Response: The IATAP evaluation criteria were developed by Coast Guard subject-matter experts (SMEs) based on previous oil spill and general research experience. The SMEs also considered the types of information specific to this spill that the Unified Area Command would need as part of their operational assessment of technologies.

Question: Are these criteria established pre-disaster or post-disaster?

Response: These criteria were established post-disaster.

Question: Does IATAP require any legislative changes to improve its ability to effectively review and deploy technologies following an oil spill?

Response: No. At this time, the IATAP does not require any legislative changes to facilitate reviews of technologies.

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Question#:	12
Topic:	SBA
Hearing:	Harnessing Small Business Innovation: Navigating the Evaluation Process for Gulf Coast Oil Cleanup Proposals
Primary:	The Honorable Mary L. Landrieu
Committee:	SMALL BUSINESS (SENATE)

Question: In your testimony, you mention that there are currently eight (8) Federal agencies as part of the Federal evaluation working group: Coast Guard; EPA; Minerals Management Service; National Oceanic and Atmospheric Administration; USDA; and the Corps of Engineers. You also indicate that other agencies or entities "may be added to the [working group] as required depending on the technology under evaluation."

To your knowledge, has the Small Business Administration been part of any previous Interagency Alternative Technology Assessment Program working groups? (Yes/No)

Response: No.

Question: If not, is this because the SBA does not have any specific technical expertise in different technologies under evaluation?

Response: The Interagency Alternative Technology Assessment Program (IATAP) is not aware of any SBA technical expertise related to spill response.

Question: The SBA includes an Office of Technology which is responsible for managing the Small Business Innovation Research (SBIR) program at the 11 participating agencies and departments. The SBIR program has awarded more than $24 billion to more than 100,000 projects since its inception. Will you consult with the SBA in the future in the event that their participation may better assist small businesses with navigating the Federal evaluation process?

Response: The IATAP welcomes the opportunity to coordinate with the SBA in the future to facilitate process development that is conducive to use by small businesses.

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Question#:	13
Topic:	cleanup
Hearing:	Harnessing Small Business Innovation: Navigating the Evaluation Process for Gulf Coast Oil Cleanup Proposals
Primary:	The Honorable Mary L. Landrieu
Committee:	SMALL BUSINESS (SENATE)

Question: After the Exxon Valdez spill, industry worked with the Federal government to build approximately 16 Marine Spill Response vessels. However, these vessels were primarily designed and built to respond to tanker type spills and cleanup. Following the Deepwater Horizon disaster, it appears that we do not have the vessels or technologies readily available to effectively respond to the extreme technology needs brought to bear by a catastrophic disaster with a deepwater well.

Is the Coast Guard evaluating any types of technology or specific vessels that may be needed to immediately respond to another fire and blow out similar to the Deepwater Horizon?

Response: Prior to the Deepwater Horizon spill, the Coast Guard's spill-related research plan included the following focus areas: High Latitude (Arctic Region) Spill Response, Submerged Oil Response, Existing Wrecks Response, and Spill Response Analysis and Tools. The Coast Guard will apply the lessons learned from the current spill to make appropriate adjustments to our ongoing research efforts, including new spill response capabilities to expand, update or replace existing capabilities.

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Question#:	14
Topic:	BAD
Hearing:	Harnessing Small Business Innovation: Navigating the Evaluation Process for Gulf Coast Oil Cleanup Proposals
Primary:	The Honorable Mary L. Landrieu
Committee:	SMALL BUSINESS (SENATE)

Question: The U.S. Coast Guard Research and Development Center last month issued a "Broad Agency Announcement" to collect and enhance technology assistance offers. They have been soliciting the submission of White Papers to support the Deepwater Horizon Response under the following five technology gaps:

1.Oil Sensing Improvements to Response and Detection (e.g., tactical oil sensing, surface oil tracking and reporting, submerged oil detection, submerged oil tracking and reporting, etc.)

2.Oil Wellhead Control and Submerged Oil Response (e.g., wellhead spill control, wellhead shutoff measures, submerged oil collection, submerged oil treatment, etc.)

3.Traditional Oil Spill Response Technologies (e.g., booms, skimmers, surface collection techniques, absorbents, near-and on-shore response, innovative applications not commonly used for spill response, disposal, etc.)

4.Alternative Oil Spill Response Technologies (e.g., In-situ burn, alternative chemical treatments, innovative applications not commonly used for oil response, etc.)

5.Oil Spill Damage Assessment and Restoration (e.g., damage assessment techniques, tracking surface restoration technologies and submerged restoration technologies, etc.)

Which category or categories have received the most submissions from companies?

Response: The following is a breakdown by category for the 3544 submissions that the Interagency Alternative Technology Assessment Program (IATAP) has received as of 15 July 2010:

Oil Wellhead Control and Submerged Oil Response -	2266
Oil Sensing Improvements to Response and Detection -	137
Traditional Oil Spill Response Technologies -	419
Alternative Oil Spill Response Technologies -	550
Oil Spill Damage Assessment and Restoration -	172

Question: Do you have an estimate on the percentage of proposals submitted which are these types of technologies?

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Question#:	14
Topic:	BAD
Hearing:	Harnessing Small Business Innovation: Navigating the Evaluation Process for Gulf Coast Oil Cleanup Proposals
Primary:	The Honorable Mary L. Landrieu
Committee:	SMALL BUSINESS (SENATE)

Response: The following is a breakdown by category for the 3544 submissions that the IATAP has received as of 15 July 2010:

Oil Wellhead Control and Submerged Oil Response -	64% (2266)
Oil Sensing Improvements to Response and Detection -	4% (137)
Traditional Oil Spill Response Technologies -	12% (419)
Alternative Oil Spill Response Technologies -	15% (550)
Oil Spill Damage Assessment and Restoration -	5% (172)

Question: Based upon the situation in the Gulf of Mexico today, do you need one type of technology versus another to effectively respond to the changing nature of this disaster? (Yes/No)

Response: No.

Question: In your opinion, are these five categories both clear and transparent for small businesses seeking to put their technologies forward for this incident?

Response: We believe these categories are both clear and transparent. However, the Broad Agency Announcement defining the IATAP process includes a link to an e-mail address (RDC-BAA-DHR@uscg.mil) so that submitters and potential submitters can ask contractual and technical questions regarding the process.

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

DEC 2 1 2010

OFFICE OF CONGRESSIONAL AND
INTERGOVERNMENTAL RELATIONS

The Honorable Mary L. Landrieu
Chair
Committee on Small Business and Entrepreneurship
United States Senate
Washington, D.C. 20510

Dear Chair Landrieu:

Thank you for your letter of July 13, 2010, to U.S. Environmental Protection Agency (EPA) Assistant Administrator Dr. Paul Anastas providing Questions for the Record from the June 17, 2010, hearing titled "Harnessing Small Business Innovation: Navigating the Evaluation Process for Gulf Coast Oil Cleanup Proposals."

Please find enclosed responses to these questions. I hope this information will be useful to you and Members of the Committee. If you have further questions, please contact me or your staff may contact Carolyn Levine in EPA's Office of Congressional and Intergovernmental Relations at (202) 564-1859.

Sincerely,

Arvin R. Ganesan
Deputy Associate Administrator
for Congressional Affairs

Enclosure

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U.S. Environmental Protection Agency
Responses to Questions for the Record from the
June 17, 2010 Hearing on
"Harnessing Small Business Innovation: Navigating the Evaluation Process for Gulf Coast Oil Cleanup Proposals"
Before the Senate Committee on Small Business and Entrepreneurship

Chair Mary L. Landrieu

Question #1—Patent Protection for Small Businesses During Disaster Outreach
Our committee and other Senate offices have received many phone calls and e-mails from small businesses that believe their technologies may be able to help with the oil spill. These businesses are at different stages of developing their technology, and so some do not yet have patents on them.

- **Does the EPA have any policies in place to help these small businesses in protecting their ideas?**

- **Are there any incentives that your agencies have to encourage individuals that do not currently have intellectual property protection to submit their proposals?**

Response: Yes. Any person or business can approach the Agency to discuss an idea in confidence. EPA staff can sign a nondisclosure agreement (NDA) to ensure that the idea is not divulged outside of the meeting or discussion.

However, it is important for an individual or business promoting intellectual property to ensure that it is protected before it is divulged publically. The best protection is to apply for a patent. If the Agency is approached with an invention for potential use in an emergency response, there is no way to protect proprietary information during deployment. It is important that we fully understand how the invention performs (both in testing and in the field) so that we can be protective of human health and the environment. In most cases, it is unlikely that an unpatented, patent pending or newly patented idea represents a technology that can be immediately deployed "as is." A patent is the first step in what is typically a long technology development process that is necessary to engineer the invention into a well-performing and commercially viable product.

We are always willing to discuss an idea in confidence with an inventor after having signed a nondisclosure agreement. EPA's Office of Research and Development implements the Environmental Technology Verification (ETV) Program. This program, managed by the National Risk Management Research Laboratory (NRMRL) in Cincinnati, Ohio, aims to accelerate the implementation of commercially ready environmental technologies. To find out more about this program, please visit our website at:
http://www.epa.gov/nrmrl/std/etv/pubs/600f08012.pdf.

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Question #2 – EPA Approval on Products

In your testimony, you mention that EPA is responsible for maintaining the National Contingency Plan's Product Schedule, which lists chemical/biological products available for Federal On-Scene Coordinators to use in spill response and cleanup efforts. As each spill is unique, it is up to each On-Scene Coordinator to determine which products may be used in different spills. It is my understanding that, for certain types of technologies such as dispersants, EPA's approval is almost essential for their deployment.

- **Can you outline what the process is for businesses to get onto the Product Schedule before a disaster occurs?**
- **If a technology/product is not on the Product Schedule, but is submitted to either BP or the Federal evaluation team and is deemed a viable solution, what is the process for it to get EPA approval?**

Response: EPA manages the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) Product Schedule, the listing of certain chemicals and products that are authorized for use in an oil spill response. To be listed on the NCP Product Schedule, a product manufacturer must follow the requirements and instructions detailed in Subpart J of the NCP. These requirements and instructions specify the tests that are to be conducted by qualified laboratories on the product (e.g. efficacy and toxicity) and the details about a product to be collected by the manufacturer, including the chemical components, formula, shelf life, certain physical/chemical properties, and safe handling practices. More information on the types of products on the NCP Product Schedule and the listing process are available on EPA's website at:
http://www.epa.gov/emergencies/content/ncp/index.htm#howto

The raw laboratory test data and details about the product are submitted by the manufacturer to EPA for review and a determination whether to list that product on the Product Schedule. EPA reviews the application to ensure that all the regulatory data requirements are met, queries the manufacturer on any information that is insufficient or unclear, and may request re-submission or retesting to correct errors or clarify information.

EPA must complete its review and respond to the manufacturer within 60 days of receipt of a submission. When EPA is confident that all testing and data requirements have been met, the new product is listed on the NCP Product Schedule. The NCP does not mandate the use of products listed on the Product Schedule by the Federal On-Scene Coordinator, state, industry, or any oil spill response organization. Further, such listing does not indicate that EPA endorses, recommends, licenses, certifies or authorizes use of the product.

New chemical/biological agents submitted to either BP or the Federal evaluation team that are not currently on the NCP Product Schedule must follow the process outlined above to be listed before they may be used. Administrator Jackson has committed that EPA will be evaluating the NCP Subpart J listing process to assess whether appropriate revisions are needed.

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Question #3 – Oil Pollution Act

In testimony submitted for this hearing, the Coast Guard mentions that the Oil Pollution Act (OPA) of 1990 and other regulations guide the Federal government's response to oil spills.

- **Does OPA specify requirements/criteria for Federal review of clean up proposals? (Yes/No)**

Response: No.

- **If not, how are Interagency Alternative Technology Assessment Program (IATAP) criteria established?**

Response: The U.S. Coast Guard (USCG) established the Interagency Alternative Technology Assessment Program (IATAP) for review of alternative response technologies by an interagency team of experts. Additional information about the process is available on the USCG's website: http://www.uscg.mil/acquisition/business/deepwaterhorizon.asp.

- **Are these criteria established pre-disaster or post-disaster?**

Response: EPA defers to USCG for response.

- **Does IATAP require any legislative changes to improve its ability to effectively review and deploy technologies following an oil spill?**

Response: EPA defers to USCG for a response.

Question #4 – University Coordination/Outreach

In your testimony, you discuss the June 5, 2010 Alternative Coastal Protection and Cleanup Technology Forum in New Orleans. This discussion, hosted by EPA, focused on prevention and containment, short-term approaches and measures for oil contaminated marshes. It is my understanding that EPA Administrator Lisa Jackson has also held other meetings with various university, business, and nonprofit groups across the Gulf Coast.

- **On our second panel of the hearing, we heard from university officials. Can you outline EPA's outreach to date with Gulf Coast universities as well as any existing partnerships between EPA and universities on cleanup efforts?**

Response: Since the spill occurred, EPA has been reaching out to universities across the U.S. and specifically to those in the Gulf region. A number of science forums have been held to facilitate interaction and communication between academia and the federal government as response activities progressed. EPA contacted researchers at universities in the Gulf (e.g., LSU, Tulane) to discuss details of research being conducted, share and review data, information and findings and to identify areas of research and collaboration. In addition, scientific meetings have been held to discuss the longer term monitoring of the Gulf and to solicit comments on the

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developing plans. EPA's Office of Research and Development will conduct workshops in the Gulf Region on the EPA Oil Spill Research Grant Program and Process.

In addition, the Supplemental Appropriations Act of 2010 provided an investment of $2 million to study the potential human and environmental risks and impacts of the release of crude oil and the application of dispersants, surface washing agents, and other mitigation measures listed in the National Contingency Plan Product Schedule. Grants will be awarded to universities with expertise in oil spills and the use of dispersants, as well as expertise on the ecological systems in the Gulf region. Research will focus on:

- the potential exposure and human health and environmental impacts of chemical dispersants and dispersed oil;
- the efficacy of dispersants and other oil spill mitigation measures; and
- the potential near and longer-term impacts of the Gulf Spill to human health and a broad range of aquatic and land species.

- **Do you have any recommendations for universities with specific technologies or businesses that may be able to assist with the cleanup efforts?**

Response: Yes. During the response, there were two venues available for the public to submit an idea, suggestion, or technology for consideration in the Deepwater Horizon Response. As noted above, USCG established the Interagency Alternative Technology Assessment Program (IATAP) on June 4, 2010 for review of alternative response technologies by an interagency team of experts. USCG issued a Broad Agency Announcement for the purpose of organizing the collection and enhancing the assessment of technology assistance offers. During the response, the Unified Area Command established a website for the public to submit ideas that linked to the IATAP submission process. Now that response efforts have moved toward recovery, the IATAP stopped accepting new white papers in support of the Deepwater Horizon Response by closing Broad Agency Announcement on Sept. 30, 2010. All white papers submitted prior to that date will continue to be adjudicated in accordance with the instructions provided in the BAA.

In addition to the IATAP submission process, which focused mainly on spill treatment technologies, EPA, and the government as a whole, always welcome new analytical techniques or approaches developed by universities that could be very helpful in determining how effective an oil spill cleanup is progressing. In such instances, EPA and the government as a whole always welcome such input and encourage the scientist(s) to collaborate in gathering new or improved data that would aid the response mission.

Question #5 – EPA vs. State Environmental Agencies

- **What is EPA's responsibility on requirements for products deployed in the incident area versus State Environmental Agencies?**

Response: Deployment of products to be used in an oil spill is the responsibility of the Federal On-Scene Coordinator (FOSC) in coordination with the appropriate Regional Response Team (RRT), trustees, states, and municipalities in the affected area. Note that states are included

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among the responsible authorizing team members. EPA's responsibility, among other activities, is to manage the NCP Product Schedule and ensure that products being used are on the Schedule

- **Are any individual requirements established by State Environmental agencies or do they generally follow EPA's lead?**

Response: The States are part of the RRT process and therefore, participate in developing area contingency planning that were established prior to a spill occurring, which may have (in certain instances) pre-authorized products (e.g. dispersants, surface washing agents. etc.) to be deployed in the event of a spill. Following a spill, as a member of the RRT, States participate in decision-making on product usage as the response is progressing.

Question #6 – Technology Gap Categories

The U.S. Coast Guard Research and Development Center last month issued a "Broad Agency Announcement" to collect and enhance technology assistance offers. They have been soliciting the submission of White Papers to support the Deepwater Horizon Response under the following five technology gaps:

1. **Oil Sensing Improvements to Response and Detection (e.g., tactical oil sensing, surface oil tracking and reporting, submerged oil detection, submerged oil tracking and reporting, etc.)**

2. **Oil Wellhead Control and Submerged Oil Response (e.g., wellhead spill control, wellhead shutoff measures, submerged oil collection, submerged oil treatment, etc.)**

3. **Traditional Oil Spill Response Technologies (e.g., booms, skimmers, surface collection techniques, absorbents, near-and on-shore response, innovative applications not commonly used for spill response, disposal, etc.)**

4. **Alternative Oil Spill Response Technologies (e.g., In-situ burn, alternative chemical treatments, innovative applications not commonly used for oil response, etc.)**

5. **Oil Spill Damage Assessment and Restoration (e.g., damage assessment techniques, tracking surface restoration technologies and submerged restoration technologies, etc.)**

- **In your opinion, are these five categories both clear and transparent for small businesses seeking to put their technologies forward for this incident?**

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Response: Yes, we believe the categories established by USCG are appropriate.

- **Based upon the situation in the Gulf of Mexico today, do you need one type of technology versus another to effectively respond to the changing nature of this disaster? (Yes/No)**

Response: No, the full array of response tools was needed to respond to the Gulf oil spill, including mechanical recovery, in-situ burning, booming, and dispersant use.

- **Does the EPA have the ability to issue a contract immediately if a 'silver bullet' white paper comes across your desk? (Yes/No)**

Response: No. The purpose of soliciting white papers was to gather rough order of magnitude costs, technical approach, and scope of work. If a submission was determined to merit a field trial or deployment, more thorough technical and cost proposals would be necessary to support procurement.

- **Are there any recommendations you can provide on how we might be able to expedite the process for such proposals or for technologies that could immediately be deployed into the incident area?**

Response: It has always been EPA's position that any technology to be used in an oil spill cleanup must have a solid foundation in science, which includes the submission of supporting peer-reviewed data demonstrating effectiveness and sustainability compared to a no-treatment control (including independent replicates). Without proper testing, it would be very difficult for any product to be used ahead of others that have met the minimum scientific standards of quality assurance. The IATAP process during the response to the Deepwater Horizon oil spill allowed for the effective submission and expedited testing of new technologies.

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United States Senate
Committee on Small Business and Entrepreneurship

Hearing
"Harnessing Small Business Innovation: Navigating the Evaluation Process for Gulf Coast Oil Cleanup Proposals"

June 17, 2010

Responses to Questions for the Record
From Heather Baird, Vice President MicroSorb Environmental Products, Inc.

Question #1 – Congressional/SBA Involvement
In listening to the panel's testimony today, I am impressed with the amount of hard work you have all put into your respective research and discoveries. It is expensive and time-consuming for small businesses to pursue the development of new and advanced technologies, which is why if we can reduce any unnecessary barriers we should.

- In your opinion, what legislative changes could Congress make to either reduce Federal bureaucracy or incentivize small businesses to bring their technologies forward for Gulf of Mexico cleanup efforts?

To this day, the best way to propose solutions for cleanup of the Gulf remains unclear. We have heard members of the federal government proclaim that they are in charge of the cleanup effort. However, to our knowledge, the government has not provided a complete pathway for businesses to assist in the cleanup effort. There are several well-intentioned government websites collecting proposals, assessing proposals for relevance, and then forwarding the more promising proposals along to the next department, all the while buoying companies with favorable and optimistic feedback. But despite this government effort, there isn't any clear end point, nor is there opportunity for dialog during this process. It is not clear who has the resources or the authority to initiate a contract negotiation or make a decision. We still believe that BP has the final and only say in this process.

Regarding incentivizing small businesses to bring their technologies forward: Small businesses with innovative solutions can compete when there is openness and willingness by an empowered authority who can both invite proposals and then execute contracts. Small businesses can compete as long as the costs associated with the pursuit of the business are manageable. However, they cannot afford to engage in a process that doesn't hold any reasonable promise of consideration. We have found that there is an extensive amount of testing, testing that has not yet begun at day 102, before our proven, approved and non-toxic solution can even be considered for use. We are willing to invest in the testing process as long as the testing approach is fair, the costs associated with the testing are not a barrier to entry, and there is a likelihood that the most promising solutions will result in an opportunity to negotiate a business arrangement.

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However, in the absence of a clear Federal path forward to evaluate non-mechanical technologies like bioremediation, some Gulf States are planning on running their own evaluations. This State-by-State approach to testing is expensive to each participating company and logistically problematic for small businesses. The testing costs are exceptionally high (and at our own expense) and the testing organizers (States) admit that a winning and efficacious solution will not necessarily result in a business opportunity with BP. However, failure to participate will immediately eliminate you from consideration in that State, so small businesses have no choice but to go forward. An effective Federal response would streamline the evaluation process to one entity, fast-track previously tested and accepted solutions like ours that are scalable and ready for deployment. I would encourage eliminating or at least subsidizing individual State-run tests and other pay-to-play evaluations that are achievable only by big businesses with large capital reserves.

- We do not want to unnecessarily add another Federal agency to the mix if it may add another layer of bureaucracy to the process. That said, the U.S. Small Business Administration has nationwide networks of counseling partners as well as various contracting programs for minority and disadvantaged businesses. Do any of you believe it would help your business or businesses you work with if the Small Business Administration played an increased role in helping small businesses navigate the Federal evaluation process? (Yes/No)

We have not yet discovered a "Federal Evaluation Process" that ends in the potential for a contract for relevant, winning solutions. As previously mentioned, in our experience all roads lead to BP. For example, the Coast Guard has now evaluated our proposed solutions via the Broad Agency Announcement. To the Coast Guard's credit, the process we experienced was just as described in their testimony. After submitting our solution via the Coast Guard BAA website, we were provided a tracking number and notified of our status throughout the evaluation process. In the end, we were informed that our proposal "has potential for benefit to the spill response effort". We were then informed that our proposal was passed along to the Federal On-Scene Coordinator (FOSC). Since then, neither the Coast Guard nor the FOSC has contacted us. To the best of our knowledge, BP is unaware of our completion of this process. We are uncertain where our proposal now stands and we continue to wait.

In light of our own experience, we are uncertain how the Small Business Administration can truly assist any small business in this situation. If it can help ensure that relevant proposals are fast-tracked through the process and watch out for unnecessary bureaucratic barriers, I could see some benefit, but largely it is the process that needs continued refinement. Involvement by other entities may be premature.

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Question #2 – Small Business Experience

In your testimony you mention that you "bounced around" Federal, State, and local officials in your attempts to connect with a decision maker in the Gulf Coast that could get your technology deployed as part of the response efforts. You indicate that this week you submitted a white paper to the *Deepwater Horizon* website.

- Did you submit a white paper to just BP, just the Federal team, or both?

To be clear, we submitted to the Deepwater Horizon Website (BP) back in May, just days after the explosion and as soon as the website was operational. The submission was not a white paper, rather a series of 200 word text boxes online where we could briefly detail our product and its benefits. Next, in June, we submitted a white paper in response to the Coast Guard's Broad Agency Announcement. We learned of this avenue for white paper submission through testimony at this hearing. Federal and State Government officials we had been in contact with previous to this testimony did not indicate to us that this CGBAA site was available nor did we learn of it in the media. We have also submitted papers/questionnaires to multiple state agencies across the Gulf coast as we have learned of them.

- You mention the vast amount of proposals and your concern of how to "break through" with a website as the only means of contact. How was the online submission process and have you received any contact back from BP or the Federal evaluation panel?

As previously mentioned, we completed the Coast Guard BAA process several weeks ago with a positive letter from the Coast Guard that stated "It has been determined that your White Paper submission has a potential for benefit to the spill response effort. Your White Paper has been forwarded to the Deepwater Horizon Response Federal On-Scene Coordinator (FOSC) for further action under its authority. Subject to the constraints and needs of the ongoing oil spill response, you may be contacted by the FOSC or the responsible party. As identified in the BAA, there is no guarantee of a contract award." We have never heard anything further from the Coast Guard or the FOSC since that letter.

On a positive note, we have in just the last week begun discussions with BP's bioremediation 'strike-team.' These discussions began after several members of Congress asked questions specifically about my company, MicroSorb, to key BP officers including Doug Suttles. It was at that time that the lines of communication between myself and BP were opened. We feel very fortunate to have had support from these members. Since we have a non-toxic, naturally occurring product with a track record of success both in prior Gulf of Mexico spills as well as prior BP spills, we are eager to get approvals and begin assisting with this cleanup effort.

- To your knowledge, does the Federal government have the ability to issue a contract immediately if a 'silver bullet' white paper comes across their desk? (Yes/No)

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In my opinion, no. It has repeatedly been my experience that all roads lead to BP, so even if a 'silver bullet' did exist and was put forth to the US Government, it would still need to go through the BP system. Perhaps it too would be subjected to testing and multiple layers of decision makers as well as delays in obtaining required approvals from multiple state and federal agencies. However, the processes (the government process and the BP process) have not been transparent to me. Perhaps someone with more insight into the inner workings of these processes would have a different answer.

- Are there any recommendations you can provide on how we might be able to expedite the process for such proposals or for technologies that could immediately be deployed into the incident area?

What we have found to be missing from this crisis is a single visible authority, empowered with the experience, the dollars and the human capital required to make a decision and take action. Between the Deepwater Horizon website(s), the Coast Guard website, the individual State websites, and others, there are too many ways to submit proposals. What's worse is that each website has slightly different questions, different formats, different expectations, and none of these speak to one another. The sheer number of white papers, descriptions and documentation required in aggregate is time-consuming, duplicative and frustrating. However, we are led to believe that submission to each of these sites is required to have our solution even considered.

In future crises of this magnitude, it would be more effective for businesses if there were a single submission process that each State and Federal entity could draw from to reduce needless additional paperwork. Theoretically each State, the Federal Government and BP all require the same general information to bring forward solutions for consideration.

In the case of the Deepwater Horizon spill, I suggest that the Federal Government establish one entity with the authority, experience, budget and personnel to evaluate and implement innovative technologies in a manner that holds prominent the interest of the citizens who are dependent on a healthy and productive Gulf of Mexico. This entity could also determine which solutions must be expedited and assist in breaking down barriers to rapid implementation.

An additional point of recommendation is a return to the EPA NCPPS which was created and maintained to help during these catastrophes. There is little or no recognition of the investment (both time and money) that businesses like MicroSorb have made over the years to obtain the necessary federal and state approvals for deploying their products for

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this type of crisis. The EPA NCPPS was developed as a tool to streamline the selection and implementation of solutions during a crisis, but we have found that our due diligence securing and maintaining that listing has been largely irrelevant in this crisis. Approved products with a track record of success are being tested against unapproved products with no track record of success. This type of testing approach is disappointing to businesses that have invested and toiled over the years to prove their products to the appropriate government agencies so as to be ready to deploy when the time came. Even more disappointing is that technologies like ours have been already been tested under this system so that they can be quickly deployed when needed.

We are at day 102 of a national crisis where proven and approved solutions are desperately needed to protect the livelihoods of our citizens. Still we find that many of these solutions continue to be sidelined without having made any progress toward assisting in the Gulf. It is a loss for the small businesses that have invested heavily behind innovative technologies for helping in situations such as this. It is also a loss for the Gulf coast and its residents who have lost their livelihoods without seeing every means of protection and remediation put to use. Why maintain a list like the EPA NCPPS if we don't turn to it at a time of national crisis? Our government should fast-track those companies who invested to maintain these listings.

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Question #3 – EPA National Contingency Product Plan Schedule

In your testimony you mention that your formula is on the EPA's National Contingency Product Plan Schedule since 1991.

- Can you outline how long that process took your company and if you believe it is an easy process for small businesses?

I am unable to provide a tremendous amount of insight into how this process works today since we completed this process nearly 20 years ago. In 1991 when our formulation was listed, the cost was around $10,000. This cost stemmed mostly from charges associated with finding and employing a lab that had the equipment and certifications required to properly complete the required procedures and provide the appropriate results in an approved format. At that time, there were not many labs in the country able to complete these tests. Naturally, this made the tests very expensive. I cannot testify to today's costs for these tests. In order to maintain our EPA NCPPS listing, we are periodically required to complete & submit new tests, but none as rigorous or as expensive as the initial tests.

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Question #4 – Federal Review Process

The U.S. Coast Guard Research and Development Center last month issued a "Broad Agency Announcement" to collect and enhance technology assistance offers. They have been soliciting the submission of White Papers to support the Deepwater Horizon Response under the following five technology gaps:

1. Oil Sensing Improvements to Response and Detection (e.g., tactical oil sensing, surface oil tracking and reporting, submerged oil detection, submerged oil tracking and reporting, etc.)

2. Oil Wellhead Control and Submerged Oil Response (e.g., wellhead spill control, wellhead shutoff measures, submerged oil collection, submerged oil treatment, etc.)

3. Traditional Oil Spill Response Technologies (e.g., booms, skimmers, surface collection techniques, absorbents, near-and on-shore response, innovative applications not commonly used for spill response, disposal, etc.)

4. Alternative Oil Spill Response Technologies (e.g., In-situ burn, alternative chemical treatments, innovative applications not commonly used for oil response, etc.)

5. Oil Spill Damage Assessment and Restoration (e.g., damage assessment techniques, tracking surface restoration technologies and submerged restoration technologies, etc.)

- In your opinion, are these five categories both clear and transparent for small businesses seeking to put their technologies forward for this incident?
    - Please include any additional comments on these categories or the Federal process for reviewing these types of proposals.

I believe that the categories are clear enough. However, as mentioned above, I believe that the larger problem is the clarity, communication and path forward after the Coast Guard has determined that the solution proposed has merit.

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United States Senate
Committee on Small Business and Entrepreneurship

Hearing
"Harnessing Small Business Innovation: Navigating the Evaluation Process for Gulf Coast Oil Cleanup Proposals"

June 17, 2010

Responses to Questions for the Record from Dan Koons, C.I.Agent Solutions

The team at C.I.Agent Solutions would like to thank you, Senator Landrieu, for your follow-up on the comments made by Dan Parker and Dan Koons before the Small Business Committee Hearing: "Harnessing Small Business Innovation: Navigating the Evaluation Process for Gulf Coast Oil Cleanup Proposals".

Our Kentucky representatives must have been too busy because they showed no support or interest in us or our product.

1A: In your opinion, what legislative changes could Congress make to either reduce Federal bureaucracy or incentivize small businesses to bring their technologies forward for Gulf of Mexico Cleanup efforts?

Small businesses do not need to be incentivized to bring new technology to any Spill Clean-up effort. They need to know the course of action to follow to get their ideas heard and taken seriously. Small businesses and individuals from every corner of our nation brought their best ideas to the Deepwater Horizon Oil Spill. Many of these were simply ideas or theories, while others, like C.I.Agent Solutions, offered technologies and methodologies that had been time-tested and proven effective on prior oil spills, under the supervision of both State and Federal On Scene Coordinators, for more than a decade. The encouragement to seek new technology needs to be placed directly upon those who lead the Spill Response, the National Response Team (NRT), but not during the time of crisis.

The following was excerpted from a paper written by Gary Ott, a retired NOAA employee, in January of 2006, entitled EPA Public Policy on Chemical Mitigation Tools (see attachment for full document). *Legislation[1] requires the development of "a schedule, prepared in cooperation with the States" identifying safe chemical mitigation tools. 20 years ago the EPA implemented a policy outlined in the National Contingency Plan, which established a procedure that required each RRT to develop their own technical review procedures, without national standards or best practices, to authorize the use of dispersants, surface collecting agent, etc.[2] The EPA's Product Schedule has not served a public policy that encourages innovation in new oil spill clean-up technologies nor a set of national standards. It is inconsistent that there is one national set of standards, example being toxic pesticides, resulting in a national list of approved products, but there is no such national set of standards to approve the use of chemical mitigation tools for oil spills. There are many products on the Product Schedule that carry a disclaimer[3], with widely varying effectiveness and toxicities, making it too difficult for most RRTs to decide if and when use of one of these products is appropriate. The EPA decision to not develop a national list of approved chemical mitigation tools has resulted in a complex process at best and a failure to test the use of potentially helpful chemical mitigation techniques during spill emergencies. New and*

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innovative developments in chemical countermeasures, unlike the example of pesticide developments, cannot reach a national market because there is not one source of a uniform risk assessment or government approval.

We feel a review is needed of this public policy based on statutory authority, administrative regulations, and current procedures to determine inconsistencies that prohibit full compliance with the purpose and provisions of the legislation. Our proposal is to request the National Response Team to investigate changing the current public policy that assigns the technical risk assessment tasks for chemical mitigation tools to individual RRTs. This effort should be consistent with EPA policies in using risk assessment tools to develop national standards – procedures used by other EPA programs. The ultimate goal is to provide RRTs and oil spill responders a list of oil spill mitigation tools that pass national standards and let the RRTs appropriately discuss the tradeoffs between using these tools, or choosing not to use them.

1B: We do not want to unnecessarily add another Federal agency to the mix if it may add another layer of bureaucracy to the process. That said, the U.S. Small Business Administration has nationwide networks of counseling partners as well as various contracting programs for minority and disadvantaged businesses. Do any of you believe it would help your business or businesses you work with if the Small Business Administration played an increased role in helping small businesses navigate the Federal evaluation process?

Yes, if SBA had a dedicated program tasked with directing companies or individuals with new technology to specific "agencies" responsible for evaluating Oil Spill Response Methodology. The second part of this would be a monitoring process to measure the "agencies'" efficiencies in responding and testing new products. As it is now, the pathway to these agencies is basically unavailable or it is so expensive that it is cost prohibitive to all but a very few.

A good place to start is with all the companies and individuals who brought ideas to the attention of BP and Joint Incident Command at the Deepwater Horizon Oil Spill.

2: Could you further explain how vendor participation in the national response teams' meetings would assist in spurring such research and in bringing new technologies forward?

For nearly a decade we have been attending meetings held by Regional Response Teams (RRT) across the United States seeking to bring new spill response technology to both the Federal and State RRT members. We have also requested, on nearly an annual basis, to be given the opportunity to attend a National Response Team (NRT) Meeting. We have made these requests through attending NRT members from NOAA, DOI, EPA and USCG. Every request was denied. The stated reason was that vendors are not permitted to attend NRT meetings. The practice of denying public access to NRT meetings probably does not meet the Statutory Exemptions under the Federal Sunshine Law and is thereby illegal as not all topics, such as oil spill response, are related to homeland security.

The importance of attending these meetings is that it is the only forum available to us to come before the policy makers who have the responsibility of modifying and/or implementing the National Incident Management System (NIMS) Response Strategy for Oil Spill Response. We have never made a request to make a presentation of any kind. We have only requested an opportunity to attend with hope that we could interact with members and learn how to gain access to them. It is inconceivable to believe that

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individual small businesses can receive fair consideration and/or evaluation of their technology/products when they are being denied access to the very decision and policy makers responsible for the application of such technology.

The NRT Brochure of 2006 states, "The NRT encourages innovations and collaboration to increase the effectiveness and reduce the cost of industry compliance with planning and response regulations." **In our ten years of trying to bring new spill technology before the NRT we have not experienced or witnessed any opportunities for "innovations and collaboration."**

It is our belief that the NIMS, as managed by the NRT, does not presently offer small businesses access and/or opportunity to bring innovative technology before those members charged with making decisions and planning our national response strategy. There simply is not an avenue available to small business nor does there exist an environment within the current system to promote innovation.

3A-1: Can you outline a specific agency or individual that requested that you leave?

Incident 1: OSRO asked us to leave while in the process of cleaning up the oil.
After hurricane Katrina we were requested by the Gulf Strike Team to come to Bayou Le Bastre to assist in cleaning up pockets of oil. Shortly after arriving we were reassigned by the Coast Guard Air Base to Citronelle, AL where a pipeline broke. While we were going about our assigned task of using our polymers to remove the oil, we were approached by the Oil Spill Response Organization (OSRO) in charge of the area and asked to slow down our process because it was working too fast. We could not slow down our product's reaction time with the oil so we were asked to leave the area. The OSRO was not interested in any product that would reduce their billable hours of labor. No one took into consideration what the extended length of clean up time would have on the environment.

Incident 2: OSRO asked us to leave while in the process of cleaning up the oil.
In July, 2008 we were asked to come to New Orleans by the USCG District Eight and the Responsible Party to assist with the oil spill in downtown New Orleans caused by the M/T Turtomara and DM932 Barge collision. Standing in front of the Incident Command Center we were told by the lead OSRO that they were not going to use our technology because they were making too much money. This occurred in spite of the USCG and Responsible Party's request to use our products and technology. During this spill event, the OSROs were running the show and made the decisions. This scenario happens often because: 1) the OSROs have response contracts, 2) it's the way it has always been, or 3) sometimes people working for the OSROs are retirees from the Federal Agencies that oversee the spill response.

The network within the response industry is a very tight and closed group and they perceive the introduction of any technology that would reduce the amount of labor they can bill as a threat. The level of control exercised by the response industry during a spill response event is greater than any other entity involved. Simple evidence of this is in the published contact list for the different staging areas on the Deepwater Horizon Oil Spill. Of the ten names listed for Venice - five work for OSROs and in Pensacola - five of the ten work for OSROs. This pattern of control is prevalent across the entire Gulf Coast response command network.

We have contacted nearly every major OSRO in the United States trying to encourage them to add our polymer technology to their response 'tool kit'. It takes less time to clean up a spill and we are environmentally friendly. Plus, our polymer technology is especially good at capturing sheen, which is usually left behind after a spill clean-up due to conventional methods not having the ability of process

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sheen. But the response is always the same; they know of our technology but are not interested in doing anything that would reduce their ability to bill for hours of labor.

I have no answer on how to overcome a system that is more interested in how much money they can make as opposed to solving the problem and lessening the damage to the environment. As one executive from the response industry stated, "being an OSRO is license to steal."

4A: In your opinion, are these five categories both clear and transparent for small businesses seeking to put their technologies forward for this incident? Please include any additional comments on these categories or the Federal process for reviewing these types of proposals.

4A and 4A-1: All of these topics are good and transparent.

The Selection Guide is a great tool and needs to be reenacted and updated. The current data on Alternative Oil Spill Response Technology is old; maybe ten years. The Selection Guide needs to include more industry comments and findings rather than just scientific jargon, which is confusing as the least. It needs in-the-field user comments; people that have experience using new technologies and those that have put their blood and sweat into developing their technology. The USCG and EPA can't be the only ones charged with communicating about these technologies. Panel discussions need to be open to both small and large businesses, as well as knowledgeable individuals. Just submitting a paper doesn't guarantee anyone will read it; or if they do read it, what action will be taken. For several years we have been band from talking about new technology at RRT meetings because it might be perceived as a commercial for a specific product. How is one to get information out to these people who need to know? When are they supposed to learn about new technologies? These organizations can't keep shutting the doors on us.

4B: To your knowledge, does the Federal government have the ability to issue a contract immediately if a 'silver bullet' white paper comes across their desk? (Yes/No). Are there any recommendations you can provide on how we might be able to expedite the process for such proposals or for technologies that could immediately be deployed into the incident area?

4B and 4B-1: NO. The Federal Government does not have the capability to bring a 'silver bullet' white paper to the field under the present structure of the National Incident Command System. One agency's 'silver bullet' may be another agency's 'straight razor' and under the present structure every agency has the power to VETO.

Final Note:
Why should we have to go to foreign countries like Mexico, Australia, Sweden or the UK to get our products deployed? The United States should be the world leader in oil spill response technologies and methodologies. Instead, the current acceptance process is making it almost impossible to bring this much needed new technology to the forefront.

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Help create an environment that embraces new technology rather than inhibit it. Open the doors to provide access to the decision and policy makers responsible for implementing our nation's response plans.

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[1] "A schedule, prepared in cooperation with the States, identifying – (i) dispersants, other chemicals, and other spill mitigating devices and substances, if any, that may be used in carrying out the Plan, (ii) in waters in which such dispersants, other chemicals, and other spill mitigating devices and substances may be used, and (iii) the quantities of such ... which can be used safely in such waters," Clean Water Act, Section 311 (d) (2) and Oil Pollution Act, 1990, Section 4201 (a)

[2] Dispersant, surface washing agent, burning agent, bioremediation agent, or miscellaneous oil spill control agents on the oil discharge, provided that the products are listed in the NCP Product Schedule. 40 CFR part 300.910

3 "(PRODUCT NAME) is on the U.S. Environmental Protection Agency's NCP Product Schedule. This listing does NOT mean that EPA approves, recommends, licenses, certifies, or authorizes the use of (PRODUCT NAME) on an oil discharge. This listing means only that data has been submitted to EPA as required by subpart J of the National Contingency Plan, Sec. 300.915."

Attachments:

EPA Public Policy on Chemical Mitigation Tools, January 1, 2006, written by Gary Ott.

Letter to Eric J. Mosher, Chief Response and Prevention Branch US Environmental Protection Agency, Region III, March 30, 2009 written by Mary A. Colligan, Assistant Regional Administrator for Protected Resources.

Letter to Senator Mitch McConnel, March 31, 2010, written by Dan Parker

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agent solutions

COPY

March 31, 2010

The Honorable Senator Mitch McConnell
361-A Russell Senate Office Bldg
Washington, DC 20510

Dear Senator McConnell,

We have been working with your office for several months now trying to solve an ongoing and discriminatory situation that has been years in the making. This particular situation falls under your purview and is having a strong negative effect on this viable small business in Louisville. It is through our work with Neil Chaterjee that we learned the Environmental Protection Agency (EPA) is not willing to respond to Neil's efforts. Neil suggested we put our request in writing and send it directly to you. C.I.Agent Solutions®, if given the chance could revolutionize the spill response industry, save time and money in the process. **It is that chance we hope to be afforded through your intervention.**

Over the course of the last eight years C.I.Agent Solutions® has responded promptly to requests made by all appropriate agencies, spent hundreds of thousands of dollars and followed the letter of the law that was placed before us. To date, we have made only minor advances. This is what brings us to you for support, answers and a fair outcome. We respectfully request that you contact the EPA on our behalf as it appears the hold up falls there. C.I.Agent Solutions® feels that we have been given fair consideration by NOAA, U.S.Coast Guard and Department of Interior.

Our efforts and financial expenditures have been directly related to pre-approvals for use of our product. These pre-approvals are obtained through the RRT meetings which are held twice a year for each region. There are a total of 10 regions in the United States. Although there has been positive movement in Regions 2, 5, and 6, we have only received pre-approval for regions 3, 4, and the Caribbean. This pre-approval requires signatures through the RRT's. Unfortunately, there appears to be an unexplainable snag in this process at some level and I am hoping you will be successful in determining why and where.

You will find a list of questions to which I would appreciate answers regarding our products' use and why standards are not consistent with all companies and all products of similar use.

- The EPA states "If your product is not hazardous, it is not a "chemical" entered into the marine environment that is susceptible to regulations limiting the "release" of chemical countermeasures." C.I.Agent is a non-hazardous material. The EPA has placed us in the miscellaneous category under the National Contingency Plan Product Schedule. We believe that we should be in a category for non-hazardous oil mitigation products or solidifiers since our product is environmentally safe and can even be recycled. We are a solidifier. There are products that call themselves absorbents, but also claim solidification and have not had to follow the stringent guidelines placed before C.I.Agent Solutions®.
- Why is industry allowed and even welcome to attend the RRT meetings, but the NRT meetings are closed? Can this be changed and open to those affected by the decisions made?
- We feel that the Risk Assessment Policies are inconsistent between agencies even though all fall under the purview of the Federal Government. Can this be reviewed?
- Why have we not been informed if there are issues we need to resolve to obtain this pre-approval? Why have we been pre-approved in some regions and others seemed resistant to follow? We have clearly fulfilled the request for information placed before us.

11760 Commonwealth Dr. • Louisville, KY 40299 office 502.267.0101 toll-free 866.242.4368 fax 502.267.0181 web www.ciagent.com

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- Is there a different process for each region even though they fall under the same federal agency jurisdiction? If so, why have we not been informed of such? Why is there not a uniform policy within the different agencies?
- We ask that you request the National Response Team to investigate changing the current public policy that assigns the technical risk assessment tasks for chemical mitigation tools to individual RRT's. This effort should be consistent with EPA policies in using risk assessment tools to develop national standards – procedures used by other EPA programs. Similarly, this effort should build upon the 1989 and 2005 National Research Council reports on using chemical dispersants in the sea, and the recently published USCG programmatic environmental impact statement on the net environmental benefit of chemical countermeasures in the marine environment." These statements are taken directly from a review paper written by Gary Ott (paragraph 5) in our attachments.
- Would these NRT agencies jointly consider updating and providing a list of chemical mitigation tools that have passed the national standards to the oil spill responders?

It is our belief that if EPA consistently recognized the pre-approval of our product and the cost benefit to the U.S. Government for spill containment and clean up, we would be able to grow our business, thus growing the Kentucky economy. Our growth would benefit other companies that we do business with nationally as well. It could be a chain reaction that would remind us what being proud, hard working Americans is all about.

Senator McConnell, in no way do I feel that my request is out of line, wrongly placed or hopeless. I do, however, know that I need your support as well as your effort to gain an understanding and a positive end to a process that has been imposed, followed and completed by C.I.Agent Solutions® of Louisville, Kentucky. We as a company have been advised that we should possibly consider 1) Opting out of a partnership with EPA and their regulations, or 2) Working to have our product declared Non-Hazardous, or 3) Bringing a lawsuit against EPA with regard to the Spill Countermeasures Regulations. At this time, we are looking to your expertise and knowledge for guidance and answers.

You will find attached information I have obtained from a retiree within the agency. These attachments contain a statement from Mr. Gary Ott (retiree), EPA Public Policy on Chemical Mitigation Tools, and a letter received by Chief Eric Mosher with EPA Region 2. In the last paragraph of the letter to Chief Mosher it states "in areas where listed species are not present, NMFS Protected Resources Division would not object to the preauthorization of the use of oil solidifiers."

At this point in the process I am adamant that this matter does need to have a satisfactory resolution and I am certain that your assistance will make the difference. If I can offer additional information or make a personal appearance to insure you of my most sincere efforts, that will not be a problem. Your immediate attention is greatly appreciated and I look forward to hearing from you in the near future.

Most Sincerely,

Dan Parker
President

CC: Jim Bunning
John Yarmuth

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-----Original Message-----
From: Gary Ott [mailto:gary.ott@cox.net]
Sent: Sun 5/4/2008 5:58 PM
To: Jack Stevens
Subject: EPA Risk Assessment Policies are Inconsistent

Jack,
A public policy that makes it unrewarding for citizens to bring oil spill chemical countermeasure products to the market place should be changed. It is my opinion that EPA risk assessment processes should be consistent across EPA programs. For example, the EPA Oil Spill Program's policy assigns to each Regional Response Team the task of developing their own risk assessment process for oil spill chemical mitigation tools. This policy is not consistent with the EPA's program, for example, that requires that one standardized risk assessment process be used for chemical pesticides.

A fair public policy that requires one risk assessment process in the development of national standards for the use of pesticides should also require one risk assessment process in the development of national standards for the use of oil spill mitigation tools.

You understand, I am sure, that your attempts to bring potentially useful chemical mitigation tools to market place are difficult when there are no national standards. EPA's risk assessment public policies should be consistent! I would suggest that direct confrontation with EPA demanding a consistent technical risk assessment process across EPA programs might have some hope of success.

Gary Ott
757-812-2807

<CountermeasurePolicyJan06.pdf>

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Review Paper Gary Ott, January 1, 2006

EPA Public Policy on Chemical Mitigation Tools

The National Research Council report, *Understanding Oil Spill Dispersants: Efficacy and Effects*[1], includes a technical assessment of existing literature on dispersant use and recommends future research to fill existing knowledge gaps. While research on the effectiveness and toxicology of dispersants and other chemical mitigation tools is important, other research directions should also be explored. Oil spill responders have limited access to chemical countermeasures. Is this because of a technical knowledge gap, or is this the result of a public policy that requires a non-standard approval process?

Legislation[2] requires the development of "a schedule, prepared in cooperation with the States" identifying safe chemical mitigation tools. Some 20 years ago the EPA implementing policy, outlined in the National Contingency Plan[3], established a procedure that required each RRT to develop their own technical review procedures - without national standards or best practices - to authorize the use of dispersants, surface collecting agent, etc[4]. This EPA policy, in the last two decades, has resulted in testing dispersants during oil spill emergencies on only four occasions[5], and in the small-scale use of dispersants on only seven occasions in the Gulf Coast.[6] In the United States, only one product type is generally used[7], while internationally there are several products that are equally or more effective in common use.[8]

A review is needed of this public policy based on statutory authority, administrative regulations, and current procedures to determine inconsistencies that prohibit full compliance with the purpose and provisions of the legislation. For example, current EPA Oil Program policies are inconsistent with those of the EPA Pesticide Program. U.S.

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[1] National Research Council. 2005. *Understanding Oil Spill Dispersants: Efficacy and Effects*. Washington, DC: National Academy Press. 248pp. Prepublication copy for public release on May 3, 2005. Order source http://books.nap.edu/catalog/11283.html

[2] "A schedule, prepared in cooperation with the States, identifying – (i) dispersants, other chemicals, and other spill mitigating devices and substances, if any, that may be used in carrying out the Plan, (ii) in waters in which such dispersants, other chemicals, and other spill mitigating devices and substances may be used, and (iii) the quantities of such… which can be used safely in such waters," Clean Water Act, Section 311 (d) (2) and Oil Pollution Act, 1990, Section 4201 (a)

[3] National Contingency Plan, 40 CFR part 300.910

[4] Dispersant, surface washing agent, burning agent, bioremediation agent, or miscellaneous oil spill control agents on the oil discharge, provided that the products are listed in the NCP Product Schedule. 40 CFR part 300.910

[5] *Pac Baroness* (1987), *Exxon Valdez* (1989), *Mega Borg* (1990), and Hawaii (2001).

[6] C. Henry, 2005. Review of Dispersant Use in U.S. Gulf of Mexico Waters Since the Oil Pollution Act of 1990. *Proceedings of the 2005 International Oil Spill Conference*, Miami, Florida. American Petroleum Institute, Washington, D.C.

[7] Corexit 9527, while stockpiles last, and then Corexit 9500

[8] Personal communication, Jacqui Michel, Chair, Committee on Understanding Oil Spill Dispersants: Efficacy and Effects. August 2005.

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Citizens have access to a long list of approved pesticides (many of which have toxic properties designed to interfere with biological processes) based on an EPA risk assessment during a standardized registration and approval process. It is inconsistent that there is one national set of standards for toxic pesticides resulting in a national list of approved products, but there is no such national set of standards to approve the use of chemical mitigation tools during oil spills.

The actual use of any chemical mitigation tools in the United States during an oil spill is a rare event. There are many products on the Product Schedule that carry a disclaimer[9], with widely varying effectiveness and toxicities, making it too difficult for most RRTs to decide if and when use of one of these products is appropriate. The EPA's Product Schedule has not served a public policy that encourages innovation in chemical mitigation techniques. The EPA decision to not develop a national list of approved chemical mitigation tools has resulted in a complex process at best, and at worst, a failure to test the use of potentially helpful chemical mitigation techniques during spill emergencies. New and innovative developments in chemical countermeasures, unlike the example of pesticide developments, cannot reach a national market because there is not one source for a uniform risk assessment or government approval.

The proposal is to request the National Response Team to investigate changing the current public policy that assigns the technical risk assessment tasks for chemical mitigation tools to individual RRTs. This effort should be consistent with EPA policies in using risk assessment tools to develop national standards – procedures used by other EPA programs. Similarly, this effort should build upon the 1989[10] and 2005[11] National Research Council reports on using chemical dispersants in the sea, and the recently published USCG programmatic environmental impact statement on the net environmental benefit of chemical countermeasures in the marine environment.[12]

The ultimate goal should be to provide RRTs and oil spill responders a list of chemical mitigation tools that pass national standards, like the pesticide registration process, and let the RRTs appropriately discuss the tradeoffs between using these tools, or choosing not to use them.

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[9] "(PRODUCT NAME) is on the U.S. Environmental Protection Agency's NCP Product Schedule. This listing does NOT mean that EPA approves, recommends, licenses, certifies, or authorizes the use of (PRODUCT NAME) on an oil discharge. This listing means only that data have been submitted to EPA as required by subpart J of the National Contingency Plan, Sec. 300.915."

[10] National Research Council. 1989. *Using Oil Spill Dispersants on the Sea.* ISBN 0-309-03882-0. Washington, DC: National Academy Press. 335pp.

[11] National Research Council. 2005. *Understanding Oil Spill Dispersants: Efficacy and Effects.* Washington, DC: National Academy Press. 248pp. Prepublication copy for public release on May 3, 2005. Order source http://books.nap.edu/catalog/11283.html

[12] Vessel and Facility Response Plans for Oil: 2003 Removal Equipment Requirements and Alternative Technology Revisions. Location at http://www.uscg.mil/hq/g-m/PEIS/peisindex.html

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UAN FARRELL
(502) 267-0181

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
NORTHEAST REGION
55 Great Republic Drive
Gloucester, MA 01930-2276

MAR 30 2009

Eric J. Mosher, Chief
Response and Prevention Branch
US Environmental Protection Agency, Region 2
2890 Woodbridge Avenue
Edison, New Jersey 08837-3679

Captain Craig Gilbert, Chief
Response Division
First Coast Guard District
408 Atlantic Avenue
Boston, Massachusetts 02110

Dear Mr. Mosher and Captain Gilbert,

This is in response to your letter regarding the use of oil solidifiers in emergency oil spill response activities within the geographic areas overseen by Regional Response Team II (RRT II). RRT II is considering whether to preauthorize oil solidifiers in responding to oil spills within RRT II, which includes the states of New Jersey and New York. In your letter you state that the USEPA and the USCG have determined that the use of oil solidifiers, as outlined in the 2008 Limited Pre-Authorization Policy for Use of Solidifiers, is not likely to adversely affect any species listed by NOAA's National Marine Fisheries Service (NMFS).

As noted in your letter, several species listed as threatened or endangered under the jurisdiction of NMFS occur within RRT II. The federally endangered shortnose sturgeon (*Acipenser brevirostrum*) occurs in the mainstem Delaware River from the lower Bay to at least Scudders Falls, Pennsylvania, as well as in the mainstem Hudson River from the Troy Dam to upper New York Harbor. Several species of listed sea turtles occur seasonally in the coastal waters of New York and New Jersey during the warmer months each year, typically from mid-May to early November. The most abundant sea turtles in these waters are the federally threatened loggerhead (*Caretta caretta*) followed by the federally endangered Kemp's ridley (*Lepidochelys kempi*). Endangered leatherbacks (*Dermochelys coriacea*) and threatened green sea turtles (*Chelonia mydas*) may also occur in these waters in warmer months. Listed whales may also be found seasonally off the Atlantic coast of New York and New Jersey. Listed whales in nearshore waters would include the federally endangered North Atlantic right (*Eubalaena glacialis*) and humpback (*Megaptera novaeangliae*) whales. Fin (*Balaenoptera physalus*) and sperm (*Physter macrocephalus*) whales are typically found in deeper offshore waters.

As oil spills are unpredictable events, it is impossible to predict the volume or concentration of oil solidifiers that would need to be applied in response to a spill or the extent of the area that the solidifier would cover. As such, it is difficult to predict what effect the solidifier would have on listed species. There is not currently enough information on the effects of solidifiers to determine that all effects of the use of these products on listed species would be wholly beneficial, insignificant, or discountable. As such, at this time, NMFS can not concur that the

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PAGE 2 of March 30, 2009 LETTER

use of oil solidifiers in response to oil spill events in areas and times when listed species are present is unlikely to adversely affect listed species under our jurisdiction.

In areas where listed species are not present, NMFS Protected Resources Division would not object to the preauthorization of the use of oil solidifiers. The emergency consultation procedures outlined in Section 7 of the Endangered Species Act (ESA) of 1973, as amended, were designed to ensure that emergency response decisions are not delayed by the interagency consultation (see 50 CFR 402.05).. NMFS PRD believes that adherence to the emergency consultation procedures would allow the use of oil solidifiers without time delay. The effects of the oil spill response, including the use of solidifiers, would then be the subject of consultation when all response activities have been completed. The emergency consultation process was successfully implemented during the response to the MV Athos I spill in the Delaware River. Please note that this determination regarding the preauthorization of oil solidifiers is consistent with the determination made by NMFS PRD in relation to the preauthorization of the use of oil solidifiers by Regional Response Team III (see enclosed letter). Thank you for the opportunity to provide comments on the preauthorization of oil solidifiers by RRT II. Should you have any questions regarding these comments, please contact Julie Crocker of my staff at (978)282-8480 or by e-mail (Julie.Crocker@noaa.gov).

Sincerely,

Mary A. Colligan
Assistant Regional Administrator
for Protected Resources

enclosure (1)

EC: Crocker, F/NER3
Greene, F/NER4
Levine, NOAA

File Code: USCG - preauthorization of oil solidifiers for oil spill response for RRT II
PCTS: F/NER/2009/

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Small Business Committee Hearing
"Harnessing Small Business Innovation: Navigating the Evaluation Process for Gulf Coast Oil Cleanup Proposals"

June 17, 2010

Responses to Questions for the Record from
Mr. Kevin Costner, Partner, Ocean Therapy Solutions

Question #1 – Congressional/SBA Involvement

In listening to the panel's testimony today, I am impressed with the amount of hard work you have all put into your respective research and discoveries. It is expensive and time-consuming for small businesses to pursue the development of new and advanced technologies, which is why if we can reduce any unnecessary barriers we should.

- In your opinion, what legislative changes could Congress make to either reduce Federal bureaucracy or incentivize small businesses to bring their technologies forward for Gulf of Mexico cleanup efforts?

- We do not want to unnecessarily add another Federal agency to the mix if it may add another layer of bureaucracy to the process. That said, the U.S. Small Business Administration has nationwide networks of counseling partners as well as various contracting programs for minority and disadvantaged businesses. Do any of you believe it would help your business or businesses you work with if the Small Business Administration played an increased role in helping small businesses navigate the Federal evaluation process? (Yes/No)

Response: I believe the same issues that prevented my company from being recognized for the last 15 years are evidenced today in the Unified Command structure we have in the Gulf of Mexico. I understand the importance of the Unified Command, that all relevant agencies need to be represented, but it also makes the group too unwieldy to work to quickly assess and deploy new technologies. There needs to be one entity, one decision maker that the private sector can go before and demonstrate their technology, both during a crisis and in times of no crisis. For example, we understand that when there is a spill on the water, the Coast Guard is in charge, but on land, the EPA would be the default responder. They both have different structures and ways of doing business, which have proved difficult and confusing to navigate, but more than anything the major problem has been that oil spill response is not a primary purpose for either of them. In addition, it is important to allow the deployment of technology during a crisis, not as an experiment, but as a calculated decision to change the economies of spill clean-up. This seems to have been done with dispersants, but not with our technology. To the extent that chemical dispersants and mechanical solutions – both oil spill clean up technologies – are held to different standards, we need to seriously address the approval and testing structures, both before and

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during crisis. My company has partnered with a UCLA scientist who is in the field right now collecting scientific data on the V-20, our largest machine currently deployed in the Gulf. This will give us quantifiable data on the machines performance with and without chemical dispersants in the water. Once again, my company is undertaking this, at our own expense, because we do not have on-water controlled spills in this country to test technology. Other countries use these spills as a tool to get to the best available technologies for spill clean-up

I did not use the Small Business Administration to assist in any way in building my business. That said, I do believe that any proactive assistance the U.S. Small Business Administration regional counseling centers could offer navigating through the federal bureaucracy would be helpful, yes.

Question #2 – Technology Evaluation Process

It is my understanding that you spent 15 years and $24 million of your own money developing your company's technology with an additional $1 million spent on adjusting the machines to prepare them for testing. Your proposal, according to reports, was one of the four in the testing phase by BP. In your testimony, you mention that you have just contracted with BP to deploy over 30 machines into the Gulf of Mexico.

Your testimony mentions that you had screened this technology for various Federal agencies over the years but agencies were noncommittal and did not follow up.

- Did you go through either the BP or Federal evaluation process for the *Deepwater Horizon* disaster? (Yes/No)
    - If not, can you outline why?
- On the House side you testified that your money – and not your "notoriety" – is what helped you to get your technology before the right decision makers. For a small business owner watching this hearing, what advice do you have if they have a viable technology that may help Gulf Coast cleanup efforts but do not have your bank account?
- To your knowledge, does the Federal government have the ability to issue a contract immediately if a 'silver bullet' white paper comes across their desk? (Yes/No)
    - Are there any recommendations you can provide on how we might be able to expedite the process for such proposals or for technologies that could immediately be deployed into the incident area?

Response: Yes, we contacted the Unified Command 800# and left our information. Please see Question #1. This was not productive in the least. The reason we eventually got our machines in front of BP is because a local politician, who had seen our machines working at an OTC

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conference ten years ago, remembered and contacted us. He pushed on the Governor and the Unified Command to take a serious look at our machines and that is what got the ball rolling for us to help participate and be part of the solution in the Gulf. If not for him, we might still be waiting for a response. Ultimately we were able to conduct many in-water tests for BP.

My advice to any entrepreneur, who has a demonstrated, proven and commercially viable product that may be helpful in cleaning up the Gulf spill, is to be persistent, call every number, talk to everyone that has a decision to make, get your product in front of a lot of people who have a stake in the Gulf and hopefully they will be successful. The more 21st century technologies that are successfully deployed to help cleanup the Gulf will continue to be in our nation's arsenal for cleaning up spills in the future. That is the good news to come out of this spill.

I do not know the answer to that question, I have never gone through that process, but it seems to me that they should be able to do that. The "silver bullet" paper is very similar to the one entity I have been talking about that needs to be empowered to make on the spot decisions in a time of crisis and in a time of business as usual. I have stated repeatedly that in a crisis such as this, with the need so extraordinary and immediate, there needs to be one entity that makes can decisions on what to deploy. This also raises another interesting point. If you look at all the agencies involved in the interagency group responsible for spill response, it could take you years and thousands of dollars, which I know about because that is what I did, to demonstrate and prove your technology in front of them. A lot of time, money and effort for no results. That doesn't seem right. There should be one entity and that entity should either accept the technology and be the one to help navigate through the bureaucracy or tell the industry to go back to the drawing board and come back with a more refined product. Particularly where technologies are transferred out of the federal government, in my case, the DOE, the DOE should have been responsible for following up, or shepherding us through the process – taking us to meet the appropriate agencies and decision makers.

Question #3 – Testing Ability During Oil Spills

It is my understanding that Canada and Norway conduct controlled oil spills to test different cleanup technologies. In the past, the MMS participated in one of the Norwegian tests. The United States, on the other hand, does not conduct controlled spills.

You testified on the House side that you were prohibited from demonstrating your technology during ongoing oil spill responses due to Coast Guard limitations for access to the disaster areas. This practice, while understandable on certain levels, may explain why thousands of proposals have flooded in to BP and the Federal government for this disaster – it is also an opportunity for companies to get their technology into a field situation.

- Do you have a comment on the lack of controlled spills here in the United States?

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Response: I believe we should do everything we can as a country to be better prepared for oil spills; I would recommend controlled spill testing. As I answered in Question #1, I am collecting scientific data during the spill to present to the Environmental Protection Agency and others involved in the Gulf spill response, once again at my own expense.

Question #4 – Federal Review Process

The U.S. Coast Guard Research and Development Center last month issued a "Broad Agency Announcement" to collect and enhance technology assistance offers. They have been soliciting the submission of White Papers to support the Deepwater Horizon Response under the following five technology gaps:

1. **Oil Sensing Improvements to Response and Detection** (e.g., tactical oil sensing, surface oil tracking and reporting, submerged oil detection, submerged oil tracking and reporting, etc.)

2. **Oil Wellhead Control and Submerged Oil Response** (e.g., wellhead spill control, wellhead shutoff measures, submerged oil collection, submerged oil treatment, etc.)

3. **Traditional Oil Spill Response Technologies** (e.g., booms, skimmers, surface collection techniques, absorbents, near-and on-shore response, innovative applications not commonly used for spill response, disposal, etc.)

4. **Alternative Oil Spill Response Technologies** (e.g., In-situ burn, alternative chemical treatments, innovative applications not commonly used for oil response, etc.)

5. **Oil Spill Damage Assessment and Restoration** (e.g., damage assessment techniques, tracking surface restoration technologies and submerged restoration technologies, etc.)

- In your opinion, are these five categories both clear and transparent for small businesses seeking to put their technologies forward for this incident?
    - Please include any additional comments on these categories or the Federal process for reviewing these types of proposals.

Response: I would change category #3 "Traditional Oil Spill Response Technologies" and add "and 21st Century Technologies." We all know that the traditional methods for cleaning up spills like boomers and skimmers have been deployed without change for the last forty years. We have to do better. We have to search out for the next and future best available technologies that will efficiently remove oil from water and particularly expect or prioritize funding toward developing those solutions that do not pollute in the process of cleaning up. I'm not sure that

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there needs to be a distinction between traditional practices and alternatives, other than that we need to focus most of our efforts on developing alternatives to the traditional practices which are outdated and inefficient. The House just passed H.R 2693 which outlines the deficiencies in research and development following the passage of the Oil Pollution Act of 1990 (OPA) and focuses this effort on developing 21st Century spill cleanup technologies. Looking back at what went right and what fell deficient after implementation of the 1990 OPA, we can chart a way forward. I think this spill and our collective response to it has identified exactly where we need to be putting research funds: developing and deploying 21st century technologies to address spills, both small and catastrophic.

5

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Senator Pryor
Statement for the Record
June 17, 2010

Madame Chairman:

I would like to talk about an Arkansas company, Green Blue Environmental, that has approached BP and federal and state officials about using their product on the Gulf of Mexico oil spill. Green Blue manufactures a product that attracts hydrocarbon bacteria that converts oil into carbon dioxide and water. According to their information, their product has a proven history of successful bioremediation of previous oil spills.

I ask unanimous consent to include Green Blue's information in the record.

Within days of the Deep Water Horizon explosion, Green Blue met with BP and Louisiana state official and later met with the Coast Guard.

Green Blue has followed all of BP's and the Federal Government's protocols for presenting remediation solutions for this crisis.

However, although they have received positive responses and almost every state, county/parish, and municipal officials that has seen a demonstration of their product, Green Blue still has not received any affirmative action from BP or federal agencies overseeing ongoing operations.

When a company with a proven product, that everyone involved says they want to use, cannot get final approval, then I think we need to find a way to cut through the bureaucracy.

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OPENING STATEMENT

Senator Roger Wicker
The United States Senate Committee on Small Business and Entrepreneurship Hearing
"Harnessing Small Business Innovation: Navigating the Evaluation Process for Gulf Coast Oil Cleanup Proposals"
Thursday, June 17, 2010
10.00 a.m.

Thank you Madam Chair and Ranking Member Snow.

Certainly the explosion on the offshore rig, Deepwater Horizon, and the oil leak into the Gulf of Mexico has had far-reaching consequences. It tragically resulted in the loss of eleven lives and there are many communities and businesses along the Gulf Coast that are hurting. We are still uncertain about how long the flow of oil will continue and how far reaching the consequences will be on marshlands, wild life, and residents of the Gulf Coast.

Madam Chair, I spent time last weekend on Mississippi's Coast talking with residents, business owners, and local leaders. I had a chance to hear firsthand the frustration directed at BP and the federal government. I am sure you are hearing the same things in Louisiana. Fishermen and boat captains complained that BP is not giving local businesses priority, and many are unable to complete the registration process to work as vessels of opportunity. I also heard from several constituents about the slow claims process, in which paperwork is often lost or misfiled. Others are very concerned about the Administration's moratorium on drilling, which will devastate the Gulf region, eliminate thousands of jobs, and drive-up the cost of energy for the nation. As James Carville said, it is "wrecking the economy" of the Gulf Coast.

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On Monday, President Obama came to the Coast to listen to these concerns. I met with him and our governor, Haley Barbour. We discussed these issues and the efforts the federal government and BP must take to make sure that everyone is affected by the spill is made whole. There is no question that BP, a large bureaucracy, has had some serious problems with its claims process. However, I have some concerns about the President's plan to have another large bureaucracy, the federal government, take over the process and start over.

In addition to the claims process, I also have received several complaints about the process my constituents must go through to submit ideas about alternative technologies, services or products. Many people have told my office that they submit a product or service and never receive a response from BP or other federal agencies. Everyone in this room knows that small businesses are the backbone of the economy. They are the job creation engines. So I am curious to hear what the Administration's plan is to effectively evaluate and purse some of the options that our small businesses are offering.

Madam Chair, I thank you for allowing these companies the opportunity to discuss their work and the response they are getting from those involved. I hope we can find a way to ensure that all ideas are properly considered and acted on as we continue to press for action to stop this oil leak, clean up our treasured Gulf Coast, and protect those whose livelihoods depend on these waters.

Let me end with this: To everyone in the audience or watching this hearing on CSPAN, let me invite you to the beautiful Gulf Coast. Despite what you may have heard on the news, our

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seafood is safe. In Mississippi, our beaches are clear and beautiful, and we have world class entertainment. So please come and visit us. You deserve a vacation, and we could use the business.

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U.S. Senate Committee on Small Business and Entrepreneurship
Hearing on "Harnessing Small Business Innovation:
Navigating the Evaluation Process for Gulf Coast Oil Cleanup Proposals"

Written Testimony of Eudes de Crécy
Hearing Date: June 17, 2010
(Post-hearing Testimony Submitted June 30, 2010)

Madam Chairwoman, Ranking Member Snowe, and Members of the Committee, thank you for the opportunity to submit testimony on this crucial component of the Gulf Coast Oil Cleanup, a component that, without your efforts, might easily continue to thwart cleanup efforts while remaining hidden from public view.

Part One of my testimony will describe a specific and compelling solution to part of the cleanup problem. Part Two will briefly describe the challenges and frustrations we have encountered in navigating the evaluation process.

Part One
Bioremediation: the Non-toxic Remedy

I am an inventor, and the founder/Chief Executive Officer of Evolugate LLC, a small business that since 2005 has developed technology to rapidly evolve micro-organisms that remedy oil contamination.

Nature provides a remedy to oil seepage from wells -- naturally occurring microbes that metabolize (eat) hydrocarbons and transform the oil into harmless natural byproducts such as water, carbon dioxide, and fatty acids. The goal of bioremediation is to harness the power of these microbes to remedy oil spills of human origin. We provide technology that dramatically accelerates the natural remediation process.

Historically, bioremediation has been limited to two main approaches:

- **Biostimulation:** One of the main limitations of bioremediation is that fact that the ocean can be a nutrient-poor habitat. After oil spills, the natural flora blooms, but their growth rate is limited by low levels of other nutrients such as nitrogen, phosphorus or iron. To remedy this problem affected areas can be fertilized with nutrients to stimulate the growth of indigenous hydrocarbonoclastic microbes.

- **Bioaugmentation:** Another problem associated with oil contamination is that crude oil consists of five general classes of hydrocarbons: n-alkanes (paraffins), cycloalkanes (naphthenes), aromatics, polycyclic aromatics (PAHs) and asphaltics. The amount and diversity of compounds in each group depends heavily on the source of the crude oil. A diverse array of microbes have been isolated that are capable of degrading the individual components of crude oil.

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> Affected areas can be seeded with such microbes that are specialized for particular the biodegradation of contaminants that otherwise resist decomposition by native flora.

In 2004 the EPA released a study on the efficacy of these approaches in the clean-up of real-world marine ecosystems affected by oil contamination.[1] The EPA concluded that neither method was particularly effective, although better results were seen with biostimulation than with bioaugmentation. In our opinion, the key to understanding the limitation of biostimulation is clearly stated in the EPA report.

> *"Biostimulation has been ineffective in accelerating the disappearance of oil on certain oil-contaminated salt marshes (Garcia-Blanco and Suidan, 2001; Shin et al., 1999) due to either the presence of high background nutrient concentrations or oxygen limitation...studies have shown that oil biodegradation on coastal wetlands is often limited by oxygen, not nutrient availability."*

In other words even when the appropriate nutrients are present, the indigenous microbes may not be capable of degrading all components of crude oil. This may be due, in part, to the fact that the contaminated ecosystem does not normally contain oil (or the type of oil specific to the spill at hand) so there are no indigenous microbes capable of degrading it. Another major limitation is oxygen, which is required for many hydrocarbon metabolic pathways. Many of the areas affected by oil spills are anoxic and the indigenous microbes are not capable of rapidly degrading hydrocarbons in anaerobic environments.

The key to understanding the failure of bioaugmentation is also contained in the EPA report:

> *"added bacteria may not be able to compete with the indigenous, well-adapted population (Lee and Levy, 1989; Venosa et al., 1992)."*

Non-indigenous microbes simply cannot compete with well-adapted indigenous microbes because they are not well-suited for growth under the conditions (temperature, pH, salinity, oxygen tension etc.) that are unique to the affected area. This conclusion is supported by other studies:[2]

> *"some bioaugmentation studies may have been carried out with bacteria not optimally adapted for survival and growth within the marine environment"*

The key to effective bioremediation is the abandonment of the "one-size-fits-all" approach to the problem. In essence, there is no magic bullet microbe capable of rapidly degrading all oil spills in any environment. Rather, effective microbes must be tailored for **the unique crude oil composition** and **unique environmental conditions** of affected areas.

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The procurement of such "targeted" microbes would be an insurmountable task if one were to rely on traditional methods such as environmental sampling or genetic engineering. Evolugate takes a different approach, one that relies on experimental evolution to produce communities of microbes that are simultaneously adapted for both crude oil composition and for environmental conditions. This approach has been described before,[3] but has been difficult to put into practice due to technological limitations that hinder the continuous culture of microbes for experimental evolution. Evolugate possesses a proprietary method for experimental evolution[5,6] that circumvents these problems and can rapidly select for improved growth rates. Our approach is to adapt a community of carefully chosen microbes to oil samples taken from affected areas of the Gulf of Mexico (coastal, pelagic, surface, deep water oil plumes) under environmental conditions (temperature, pH, salinity, oxygen tension) that are as close as possible to what would be found in the natural ecosystem. Thus, the resultant community would be both highly capable of degrading a real-world oil spill and of doing so as rapidly as possible.

Selection of the input microbes and the proper selection scenario are the keys to success. The input microbes should be targeted for their ability to breakthrough biocatalytic bottlenecks in the biodegradative process. Certain classes of hydrocarbons represent the first bottleneck. As was stated before, crude oil comprises parrafins, naphthenes, aromatics, PAHs, and asphaltenes. Generally, the components that are the most refractory to biodegradation are naphthenes and asphaltenes[3], although PAHs are of particular concern due to their water solubility, which allows them to travel far from the contamination site and to bioaccumulate in the food chain, thus representing a potent threat to human health.

Environmental conditions represent the second bottleneck. It is important that the resulting microbial community be able to degrade petroleum under real-world conditions. For example, many hydrocarbonoclastic microbes, such as *Pseudomonas sp.*, are not ideally suited for growth in marine environments. Other critical environmental factors include:

- Temperature. Microbes will need to growth at the temperature where the oil accumulates. Temperatures vary greatly from surface waters, at depth and on the beach.
- Salinity. Not all of the microbes listed above perform well in saline conditions. Salinity will vary depending on if the oil is in the open ocean, estuaries or hypersaline marshes). Some environments are hypersaline and may require halophiles.[4]
- Oxygen tension. Only the surface waters contain enough oxygen for many hydrocarbonoclastic microbes. As such, for many environments adaptation will require microbes that can degrade petroleum under anoxic conditions.[7]

The proper bioremediation of the Deepwater Horizon spill will require at least the detailed assessment of contaminated areas, the reproduction of this environment in continuous culture and the adaptation to the appropriate microbial

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communities to actual crude oil taken from the Gulf. The result will be microbes that can significantly accelerate the decomposition of crude oil and limit the environmental and economic impact of this disaster.

Part Two
A Non-responsive Evaluation Process

Deep Horizon Center. On May 4, 2010, in response to BP's call to "send us your ideas," we submitted a proposal. On May 29, 2010 we were notified that our proposal had passed the initial threshold screening process, but since then we received no response.

U.S. Coast Guard. On June 18, 2010 we submitted a proposal the U.S. Coast Guard. We have received no response.

Environmental Protection Agency. The EPA concluded years ago that bioremediation does not work and since then unfortunately has not deployed sufficient resources to keep abreast of scientific and practical developments in the field. Schedule G – the self-certification test the EPA requires – is designed to test for solutions to problems that do not exist, rather than the problems that exist today in massively catastrophic ways. Also, Schedule G arbitrarily requires tests of six to nine months duration. On May 24, 2010 we submitted proposals to different EPA officials outlining our solution. We have received no response.

BP. On June 4, 2010 and June 21, 2010 we submitted the proposal we previously sent to Deep Horizon Center directly to BP. We have received no response.

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2. McKew et al., "Efficacy of intervention strategies for bioremediation of crude oil in marine systems and effects on indigenous hydrocarbonoclastic bacteria" Environmental Microbiology (2007) 9(6)"1562–1571.
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Biographical Sketches of the Research Team and the Scientific Board of Evolugate, LLC

James Spain, PhD, is currently a Professor of Environmental Engineering at the Georgia Institute of Technology. Dr. Spain received his PhD in microbiology from The University of Texas and then studied the biodegradation of pesticides in the marine environment for five years as a post doctoral fellow and research scientist at the U.S. Environmental Protection Agency Marine Environmental Research Laboratory. Prior to joining Georgia Tech Dr. Spain directed the Environmental Biotechnology research program at the Air Force Research Laboratory in Panama City, Florida where he studied the biodegradation of synthetic organic compounds in the environment. Dr. Spain works at the interface between basic microbiology research and practical applications to solve environmental problems. His research interests in environmental biotechnology include: discovery and construction of bacteria for degradation of organic pollutants; evolution and adaptation of microbial communities; distribution, persistence, and biodegradation of chemical pollutants in soil and water; photobiological hydrogen production by cyanobacteria; and discovery of biocatalysts for green chemistry synthesis of novel materials. Dr. Spain is a former editor for Applied and Environmental Microbiology and has published widely on the biodegradation and biosynthesis of organic compounds. He consults regularly with bioremediation companies and has discovered a number of novel microorganisms able to biodegrade pollutants previously thought to be recalcitrant. Dr. Spain currently serves on the Scientific Board for Evolugate.

Steven Benner, PhD, is currently the founder and president of the Foundation for Applied Molecular Evolution (www.ffame.org). Dr. Benner received his PhD in Chemistry from Harvard University after graduating in Molecular Biophysics and Biochemistry at Yale University. In 1991, he helped found evolutionary bioinformatics, launched one of the first web-based bioinformatics servers with Gaston Gonnet, generated the first naturally organized protein sequence databases, and helped develop the MasterCatalog that generated ca. $4 million in sales. Dr Benner established paleomolecular biology, where researchers resurrect ancestral proteins from extinct organisms for study in the laboratory. He invented dynamic combinatorial chemistry, combining ideas from molecular evolution, enzymology, analytical chemistry and organic chemistry to generate a strategy to discover small molecule therapeutic leads. Dr. Benner initiated synthetic biology as a field: the Benner group was the first to synthesize a gene for an enzyme, and used organic synthesis to prepare the first artificial genetic systems, with outcomes actually applied in the therapy of HIV and hepatitis B & C. These systems also support the first artificial chemical system capable of Darwinian evolution. During his career, Dr. Benner was distinguished with many awards including: the National Science Foundation Graduate Fellow, the Anniversary Prize from the Federation of European Biochemical Societies in 1993, the Nolan Summer Award in 1998, the B. R. Baker Award in 2001 and the Sigma Xi Senior Faculty Award 2005. Dr. Benner currently serves on the Scientific Board for Evolugate.

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Valérie de Crécy-Lagard, PhD, was trained as a bacterial geneticist at the Pasteur Institute (Paris) and the National Institutes of Health (Bethesda). She has worked in industrial settings (at Aventis and a consultant for a French Biotech company) and in academic settings at The Scripps Research Institute and recently as an Associate Professor in the Department of Microbiology and Cell Science at the University of Florida. Her work has covered many aspects of microbial metabolism (primary, secondary and regulation) and resulted in approximately forty peer reviewed publications. In recent years, she has focused on combining comparative genomics with experimental validation to identify novel genes and on using experimental evolution protocols to adapt bacteria to new metabolic constraints. Dr. de Crécy-Lagard currently serves on the Scientific Board for Evolugate.

Nemat Keyhani, PhD, is currently an Associate Professor in the Department of Microbiology and Cell Science at the University of Florida. He received his PhD in Biochemistry and Molecular Biology from the Department of Biology at Johns Hopkins University. Prior to joining the University of Florida, his post-doctoral work involved studies on microbial pathogenesis and biodegradation of chitin by marine bacteria. Since joining the University of Florida, his research has focused on molecular, genetic and physiological studies of the entomopathogenic fungi, *Metarhizium anisopliae* and *Beauveria bassiana* and their ability to target diverse member of the *Arthropoda*. He has established the first extensive transcriptome analysis of *B. bassiana*, is a member of the *M. anisopliae* genome sequencing effort, and is the lead principal investigator and founder of the *B. bassiana* Genome Sequencing Consortium. Dr. Keyhani currently serves on the Scientific Board for Evolugate.

Thomas Lyons, PhD, is a former faculty member in the Department of Chemistry at the University of Florida. Dr. Lyons is also a current fellow at the Foundation for Applied Molecular Evolution (FfAME). He received his PhD in chemistry from the University of California, Los Angeles where he studied the relationship between the structure of a protein and its function, with an emphasis on how changes in the structure/function relationship can led to disease states. He then did a postdoctoral fellowship at the University of Missouri, Columbia where he studied the chemistry and genetics of nutrient uptake in microorganisms and how environmental changes alter global patterns of gene transcription. While a faculty member at the University of Florida, Dr. Lyons research focused on a new family of receptors (called PAQRs) and their role in *Metazoan* physiology and interspecies communication. He developed a high-throughput functional assay system to study the pharmacology of human PAQR receptors, several of which are tightly linked to pathological states such as type II diabetes. He continues this research at FfAME. Dr. Lyons' expertise spans the disciplines of biochemistry, pharmacology, microbiology and genetics. Dr. Lyons is currently serving as the Chief Science Officer of Evolugate.

Terrance J. Bruggeman, is an experienced CEO with extensive experience in the biotech industry, including biofuels. Mr. Bruggeman has raised substantial venture funding, research funding from strategic alliance partners and taken two of the companies' public. From 1996 to 2000, Mr. Bruggeman was Chairman, President and

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CEO of Diversa, (NASDAQ: DVSA), now Verenium, a global leader in the discovery and development of novel enzymes and bioactive compounds including the production of modified oils from biomass. During Mr. Bruggeman's career, he has overseen the development of large scale industrial facilities. Mr. Bruggeman received his BA from the University of Notre Dame and attended the MBA program at the University of Chicago. Mr. Bruggeman is currently serving as the Executive Chairman of Evolugate.

Russell J. Howard, Ph.D. is an experienced CEO who has led several successful life sciences and biotechnology companies, both private and public. Most recently, Dr. Howard served as CEO of Maxygen, a publically traded company which he founded and led through IPO and acquisition. While CEO at Maxygen Dr. Howard raised over $700M in investment and $100M in federal funds. At Maxygen he created and spun out the biofuels company Codexis. Previously he served as president of Affymax. Dr. Howard has published over 140 peer reviewed publications, is the recipient of numerous awards and honors and serves on the board of several companies and foundations.

Eudes de Crécy is the founder and CEO of Evolugate LLC, as well as the inventor of the process and proprietary microorganisms that form the basis of Evolugate's technology. Mr. de Crécy holds ten patents on the technology described above and the industrial pathways that apply the microbes derived from this method, including those related to bioremediation, biofuels, bio-insecticides and green chemistry. In addition, he founded Evolugate LLC, www.evolugate.com in April 2005 and Table Rock IP, LLC in May 2008. From 2003 until 2005, he developed a novel apparatus for the continuous culture of microorganisms, which he has exclusively licensed to Evolugate. From 1997 to 2002, he worked for a French biotech company that specialized in directed evolution, using a device known as the Genetic Engine, which was licensed from the Pasteur Institute. In 2001, he became that company's commercial representative in the United States, and he established their first large customer relationship in the United States in 2002. Mr. de Crecy began his management career in 1984 as an officer in the French Forces. Mr. de Crécy is the author of several scientific articles and manuscripts all related to the field of experimental evolution. He has served as the Chief Executive Officer of Evolugate since its inception.

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The Planet's Only Totally Green, Cradle-to-Cradle Solution for Oil Spill Remediation

June 29, 2010

The Case for "MOP™ Maximum Oil Pickup" in the Gulf
Congressional Testimony of Charles M. Diamond
CEO of MOP Environmental Solutions, Inc., Bath, NH

Presented to U.S. Senator of Louisiana, Mary L. Landrieu,
Chair, Committee on Small Business and Entrepreneurship
United States Senate

Relating to the hearing on:
Harnessing Small Business Innovation:
Navigating the Evaluation Process for Gulf Coast Oil Cleanup Proposals

Madam Chair, members of the committee: My name is Charles M. Diamond. I am CEO of MOP Environmental Solutions, Inc. in Bath NH. The testimony I am about to present could be the most important you will hear regarding the ultimate control of the present Gulf Oil Spill. I believe my testimony contains the answers that will truly work to both contain the spill at its source, retrieve virtually all the oil that remains in open waters, retrieve the difficult to remove oil from the marshlands and wetlands, protect the estuaries, protect the shorelines from any oil coming in, remove any oil from oil contaminated soil, and safely remove oil from oil coated birds and animals. All this is accomplished by using a low cost product and technique that recovers the oil for reuse so efficiently that the value of the oil can even exceed the cost of retrieval. MOP is comprised of environmentally friendly, all natural vegetable fibers treated to reject water and aggressively capture oil. The patented product that makes all this possible is "MOP™ Maximum Oil Pickup." Its efficiency, effectiveness, low cost, and the high speed of its deployment and retrieval make MOP the ideal candidate to protect the nation from present and future oil spills both on water and on land.

Had our MOP absorbent and method of deployment been used within the first 48 hours, as I will detail for you today, we would not be sitting here discussing a spill that would have otherwise been contained from the beginning.

Let me illustrate: MOP captures and recovers up to 100,000 barrels (i.e. much higher than the estimated Gulf discharge rate) of spilled oil a day using a capital expense of merely $100,000 for deployment equipment, with under $3,000,000 in product. Add to this approximately $50,000 a day for cost of retrieval of oil valued at $5,000,000 based on $50 per barrel (currently in the range of $70/bbl) for an overall profit of up to $2,000,000, or more a day, and the value of this approach becomes distinctly apparent. The value of oil retrieved could readily exceed the costs of recovery and retrieval, leaving a possible overall net profit, or break-even, instead of the billions of dollars that have already been spent and untold extensive damage that could have been prevented.

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Furthermore, dealing only with the new oil coming from the wellhead on a daily basis would be easily manageable, and the cost for containing it would have been in the millions, not the billions. Under most any circumstance, the oil would be entirely contained within a radius of 30 miles from the discharge point.

We manufacture what we believe to be the best oil spill cleanup product available: The product is built around an oil absorbent that I invented over a decade ago. It is the only cradle-to-cradle green oil spill clean up product on the market. The entire process, from creation to reuse, is completely sustainable. We manufacture MOP using all natural, environmentally safe recycled materials with electricity generated from hydroelectric power. Most notably, this unique product allows for the valuable recovery of up to 95% of the oil from the MOP sorbent for reuse.

The life cycle of MOP is one of its most extraordinary features and deserves particular attention: MOP has many environmentally beneficial disposal options such as recycling in a land farm, or pelletizing as a fuel. However, I believe the ultimate use is to process the used, oil saturated MOP through the carbon negative low temperature pyrolysis system (extensively advocated by Interior Secretary Ken Salizar in the amendment he introduced in his former capacity as the U.S. Senator of Colorado for the U.S. Agricultural Bill of 2007 and 2008). Ken Salizar is fully aware of the benefits of Carbon Negative Bio-Char technology to extract the carbon from virtually any hydrocarbon, leaving a carbon free non-polluting, hydrogen-based fuel, with the extracted carbon serving as a soil amendment that boosts agricultural yields from 200% to 400% higher than comparable tilled and fertilized soil.

This carbon-based soil amendment, (commonly referred to as Bio-Char), is the ideal host to encourage proliferation of the indigenous anaerobic microbes that live in soil. The proliferation of anaerobic microbes changes the character of the soil in a manner that boosts agricultural yields from 200% to 400%. Anaerobic microbes breathe in carbon dioxide and exhale oxygen, helping to reverse global warming, while adding their inspired carbon to the soil. **This soil improvement process is likely the only known natural process of its class that once started continues of its own accord, to further help reverse global warming, while boosting agricultural yields (equivalent to making more land).**

This disposal option, when applied to the retrieved, oil saturated MOP, indeed offers a great benefit. However, when further extended to the full range of other hydrocarbons, representing up to 95% of the waste stream now headed to landfills, offers an abundant, hydrogen based, non-polluting, extremely low cost, alternative energy source. So, the MOP recovery system offers not only an answer to the Gulf Oil Spill, but also advocates a valuable alternative pathway to reducing our dependency on fossil fuels that has tied us to foreign imports and the depletion of our natural resources.

We are exceedingly proud of the environmental commitment of our Company and the sustainable line of products that we manufacture. Not only because MOP is the environmentally responsible alternative for cleaning up oil, but also because MOP is very low in cost, is deployed and retrieved very quickly and easily, and provides for recovery of the value of the oil it retrieves. **I contend that the use of MOP Bulk Sorbent as the FIRST RESPONSE to an oil spill is the best option you have to neutralize all the potential harmful effects, both environmental and economic, of an oil spill such as you now have in the Gulf.**

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I wish to further cite the following evaluations of our MOP absorbent product, beginning with the evaluation by BP Safety Specialist Randall Fletcher, written in 1994, (copy attached).

"During four separate occasions we have had the opportunity to observe the MOP absorbent product's performance. Three were hard surface spills of various hydrocarbon products (i.e. 30w oil, transmission fluid, heavy naphtha, diesel oil, and other blended heavy sop oils). On each occasion the absorbents picked up all of the products leaving no apparent residue. We mixed water at some sites and the hydrophobic properties allowed the absorbent to hold the products while allowing the water to run free and clean of oil."

Randall ended his letter by saying the following: ***"We are extremely pleased with its (Maximum Oil Pickup's) performance and cost, and would recommend serious consideration of this product before using an alternative."***

It is notable that in the, "Use Of Sorbents for Spill Response," Published in 2009 and Commissioned by the Maritime Affairs Directorate, and the French Navy, it was determined that bulk sorbents (such as MOP) are the choice for Weathered Emulsified Crude Oil which is the specific application in the Gulf. The study stated, ..."These products (bulk sorbents) can be used in a wide variety of situations, on land and on water. Their divided form gives them a large surface area which will come into contact with the pollutant, promoting their impregnation even if the pollutant forms a thin layer or scattered slicks, which may be difficult to access."

Furthermore, the U.S. Environmental Protection Agency - National Service Center for Environmental Publications (NSCEP) recommends a priority for test of absorbents with a priority first from available and low-cost natural absorbents. Also stating "The natural sorbents are generally more readily available than the synthetics," (page 6 section 3) It is mentioned on page 25 Section 6, "One common factor among the sorbent types is that organic sorbents tend to have a greater sorption and retention capacity for organic rather than inorganic liquids." Sorbent Materials For Cleanup Of Hazardous Spills - nepis.epa.gov… (MOP Maximum Oil Pickup is the quintessential material that falls into this category).

Many communities in the Gulf region are looking to be proactive in combating the oil coming upon their shores. The community of Gulf Breeze, Florida is one community that has decided to take a proactive approach. Gulf Breeze, located in Florida's panhandle, has purchased from MOP Environmental Solutions, Inc. "MOP 201 bulk loose sorbent." MOP 201 bulk sorbent is more than ten times as effective as booms for absorbing oil. Gulf Breeze has purchased MOP 201 to distribute to waterfront landowners to assist them in confronting the spill directly should it threaten their property. They have decided not to stand by and wait for assistance. We believe their independent choice of MOP Maximum Oil Pickup is clearly the best oil sorbent product to get the job done.

In 2008 The Society of Petroleum Engineers, arguably the most respected professional publication in the Petroleum industry covered MOP Environmental Solutions' Maximum Oil Pickup (MOP) in its official publication, the Journal of Petroleum Technology. Ted Moon, who delivered the story, is the Technology Editor of the Journal of Petroleum Technology. He presents information of emerging technologies, R&D successes, new field applications, updates from the Society of Petroleum Engineers' papers about recent innovations, and more to the Journal of Petroleum Technology. The article can be read at its entirety at - www.spe.org/jpt/2008/01/new-technology-offers-profitable-holistic-approach-to-oil-spill-cleanup/

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To summarize; MOP Bulk Sorbent is a 100 percent natural product that is as safe to the environment as a leaf falling into water. MOP is unlike other bulk sorbents such as plastics that should not be used in open waters. The extreme advantages of patented MOP Maximum Oil Pickup over virtually every other sorbent demand its recognition for its exceedingly important role and for its advantages over virtually every other sorbent that is currently being used in the Gulf oil spill.

Madam Chair, let me say that **THERE IS STILL TIME** to realize the **important benefits of MOP Maximum Oil Pickup for the Gulf oil spill.**

I have included with my testimony a document called "**MOP as a FIRST RESPONSE - The Case for MOP in the Gulf.**" This document expounds in detail the important role MOP can play in the Gulf Oil Spill.

I am available to answer any, and all questions you may have. Thank you for your time.

Sincerely,

Charles Diamond
President & CEO
MOP Environmental Solutions, Inc.

Attachments

MOP as a FIRST RESPONSE - The Case for MOP in the Gulf.

BP Letter

Links

- Cleaning Oil from a Bird Feather with MOP Maximum Oil Pickup
  - www.youtube.com/watch?v=VA2ick5SUDk
- A Demonstration of MOP 201
  - www.mopenvironmental.com/videos
- The Society of Petroleum Engineers – JPT Online
  - www.spe.org/jpt/2008/01/new-technology-offers-profitable-holistic-approach-to-oil-spill-cleanup/

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The Planet's Only Totally Green, Cradle-to-Cradle Solution for Oil Spill Remediation

June 29, 2010

MOP as a FIRST RESPONSE
The Case for MOP in the Gulf

TO IMMEDIATELY NEUTRALIZE ALL POTENTIAL HARMFUL EFFECTS OF AN OIL SPILL
All you simply need to do is Use MOP Bulk Sorbent as a FIRST RESPONSE
It is easy to accomplish and will completely do the job REQUIRED.

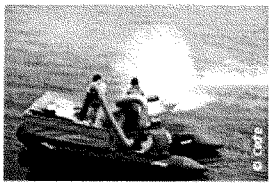
1. **MOP Bulk Sorbent once deployed on an oil spill immediately halts any further contamination by oil on land or water. By using MOP as a FIRST RESPONSE the aggressive oil-holding action of MOP locks the oil in its fiber matrix and will not release oil to the environment.**

2. **The oil holding action of MOP is not affected by foul weather. MOP holds the oil in rain, wind, sleet, or snow. MOP is very low in cost and is deployed and retrieved quickly and easily, providing for recovery of the oil at a significant profit. (See THE COST COMPARISON ----------→**

3. **MOP is as safe to the environment as a leaf landing in the water. MOP is safe to aquatic life, plants, birds and animals.**

4. **MOP Bulk Sorbent meets EPA guidelines for deployment on water or on land.** Meets Title 40 of the Code of Federal Regulations (CFR), sections 300.5 and 300.915(g) of the National Contingency Plan. An EPA Certification letter is available for any oil-spill onsite coordinator.

5. **MOP Bulk Sorbent is very low in cost and picks up to 30 times its weight in oil. For rapid deployment Our MOP CANNON blasts MOP sorbent at 150 MPH over or under an oil spill.** (see below)



No alternative sorbent is as low in cost with such high performance as our MOP Bulk Sorbent. One pound of MOP Bulk Sorbent will pick up to 30 lbs of oil. A container load of

COST COMPARISON: MOP Bulk Sorbent vs Polypropylene Booms, (the absorbent booms of choice BP is presently using) for Cleanup of 75,000 Gallons of Oil. ***

Required to Absorb 75,000 Gallons Oil
MOP Bulk sorbent: **1 Container** = (**1,000** 20lb **MOP** bags) **vs**
23,076 - 8" x 10' Polypropylene Booms.

People Needed to do the Work Deploying MOP **vs** placing booms and picking up booms.
MOP Bulk Sorbent: **5 People working 4 hours**
Polypropylene Booms**: 994 people working 8 hours**

Cost of Labor per Day
MOP Bulk Sorbent: **5 People working 4 hours = $540.00 vs**
Polypropylene Booms: **994 working 8 hours=$214,704**

Cost of material
1 Container **MOP** Bulk Sorbent: **$55,000 vs**
23,076 Polypropylene Booms: **$865,350**

Total Labor + Materials
MOP Bulk Sorbent: **$55,540 vs**
Polypropylene Booms: **$1,080,054**

Profit from Oil Recovery @ $50/barrel (currently about $75)
MOP Bulk Sorbent: **$33,745 profit vs**
Polypropylene Booms **over $1,000,000 loss**

***** The above comparison presumes the Polypropylene Booms are absorbing their theoretical capacity of oil. However, the hidden fact is that the heavy crude oil of the gulf is not able to penetrate the outer skin of the polypropylene booms. As a consequence, the crude oil merely coats the outside of the boom, effectively blocking the penetration of oil into the interior of the boom.**

In other words, the hundreds of miles of polypropylene booms being deployed are a tremendous waste of time, money and effort that merely gives the appearance of working.

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1,000 bags of MOP Bulk Sorbent can be deployed to pick up to 75,000 gallons of spilled oil with a single MOP CANNON in only 3 hours. The retrieval process for 75,000 gallons of oil can be accomplished in as little as 4 hours. Please view the following link for a demonstration of the MOP CANNON. www.youtube.com/watch?v=ndI8BjIIdNY

6. **MOP Bulk Sorbent is the only known oil spill response that works effectively in all weather conditions; high wind, rain, sleet or snow.** MOP works equally well blown under water **below** the oil spill. When you cannot use booms or skimmers, or any other method, MOP can always be blown under the water from the security of a stable large boat to capture the oil. The MOP Bulk Sorbent will immediately rise to the surface, locking any oil on contact. Once MOP contacts the oil it neutralizes virtually all the potential harmful effects to the environment, while, (UNLIKE DISPURSANTS), still preserving the value of the oil, allowing for the recovery and retrieval of the oil for its value **and (UNLIKE DISPURSANTS), MOP is as safe to the environment as a leaf falling into water.** MOP is easily retrieved and Up to 95% of the oil can be recovered - cleaner than it was when spilled since **MOP** filters as the oil is released by squeezing.[1] **This leaves MOP as the only known, completely safe, oil spill response that works effectively at all times, in all weather conditions.**

7. **MOP is Available in booms 3" to 8" diameter x 5' to 50' length; and bulk sorbent (5 lb. and 20 lb. bags)**
8. Oil-laden **MOP Bulk Sorbent** can be disposed of in several environmentally sustainable ways including land farming and industrial composting. It can also be pelletized into fuel for recovery of 100% of the available energy, and when burned has an ash content of less than 1%. Although not a preferred option, MOP easily passes the EPA requirement for disposal as a solid waste in a landfill.

9. **MOP Sorbents are made from 100% recycled materials that are fully biodegradable**.
Should a small amount of MOP wash up on the shore, it will readily bioremediate.

10. **Price Stability:** The materials from which MOP sorbent is made are classified by the EPA as Recovered Materials, that otherwise have no current recycling pathway for commercial reuse. The raw materials for manufacturing MOP are abundant and the prices are stable.

11. **MOP Environmental Solutions, Inc. RESCUE Soil Cleaning Process**
MOP has recently filed a provisional patent on what is by far the fastest, lowest cost method to clean oil saturated sand or soil on site while retrieving the oil.

12. **Loose Sorbent is the preferred Solution because of its Efficiency**. Although we do put our sorbent into booms and make them available, all booms by their very nature are inefficient. One container of our loose MOP sorbent will capture up to 75,000 gallons of oil in 3 hours. It would take over 23,000 polypropylene boom to achieve the same level of cleanup. The cost of one container of MOP bulk sorbent is $55,000. The cost of 23,000 polypropylene booms is likely over $850,000. Our own booms, filled with MOP sorbent are 4 times as effective as polypropylene booms but even using them it would require more than 5,000 booms to contain the same amount of spilled oil.

13. **Boat Skimming.** Boat Skimming allows boats to tow nets filled with MOP sorbent through the oil, capturing hundreds of times more oil than conventional skimmers in far less time by using the many vessels of opportunity that are available and eager to participate in the oil cleanup effort in a meaningful and productive way. The process and opportunity is likely the most practical way that exists to clean up the vast oil spill that remains in the Gulf region. With the tremendous resource of boats and nets, each and every day, hundreds of thousands of gallons of oil can be captured and retrieved.

Boat Skimming

a

14. **Using MOP Loose Sorbent the value of the recovered oil could significantly offset the cost of recovery.** At the very least it dramatically reduces the cost. If 75,000 gallons of spilled oil can be retrieved and recycled at a below market cost of $50/barrel for example, this creates gross income of $89,285. Less the cost of a truckload of MOP at $55,000, and labor to deploy and retrieve of $540 the profit is $33,745. This

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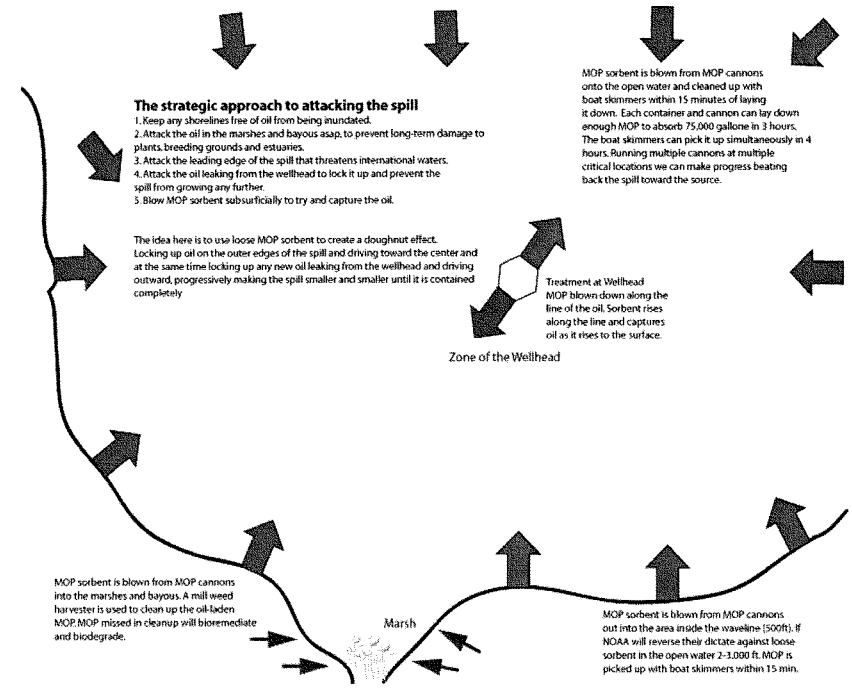
makes a truly notable difference by swapping out a loss of over $1,000,000 for a profit.

The MOP sorbent can be safely and effectively used anywhere on the spill, with its most effective application closest to the oil discharge site. Other zones of use are as follows:

1. Shoreline Zone and Littoral Zone: Where the greatest possible danger to ecosystems and livelihoods takes place is in the zone including the marshlands and bayous and from the shore – out to about 500' – 1,000'. Use of MOP's sorbent to protect this fragile ecosystem should be a priority use. MOP can be used to clean up the marshes and bayous using the MOP CANNON to deploy MOP with retrieval using a conventional millweed harvester.

2. The leading edge of the spill. MOP sorbent used at the leading edge of the spill will contain the oil within the matrix of the sorbent. MOP boat skimmers will be employed to gather the oil-laden sorbent to prevent expansion on the leading edge and the danger of oil getting into the Gulf Stream. Even if some sorbent is missed with the skimmer, the sorbent will hold the oil in its matrix and bio-remediate the oil as it biodegrades.



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BP OIL

BP Oil Company
1150 South Metcalf St.
Lima, Ohio 45804-1199

October 25, 1994

To Whom It May Concern:

SUBJECT: MOP Absorbent Product

During four separate occasions we have had the opportunity to observe the MOP absorbent product's performance. Three were hard surface spills of various hydrocarbon products (i.e. 30w oil, transmission fluid, heavy naphtha, diesel oil, and other blended heavy sop oils). On each occasion the absorbents picked up all of the products leaving no apparent residue. We mixed water at some sights and the hydrophobic properties allowed the absorbent to hold the products while allowing the water to run free and clean of oil.

The other test was with booms and pillows in shore line fresh water. The booms and pillows performed above the standards established by other booms (i.e. polypropylene). The booms had excellent penetrations and adequately contained the product spill.

The material is light weight and more economical than the competitive brands we have used. We are extremely pleased with its performance and cost, and would recommend serious consideration of this product before using an alternative.

Sincerely,

Randal S. Fletcher
Safety Specialist

RSF/lrh/word/MOPABSOR

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E·A·G·L·E
ENVIRONMENTAL SERVICES, INC.

18369 Petroleum Drive • Baton Rouge, Louisiana • 70809
Ph. (225) 757-0870 • Fax (225) 757-8855
www.eaglered.com

June 15, 2010

Sherrie Mullins
Program Director
Louisiana PTAC

Dear Ms. Mullins,

Thank you for requesting a summary of our efforts to obtain work on the oil spill cleanup and support activities. Our efforts were initiated 10 days after the explosion occurred. Eagle Environmental Services, Inc. formed a joint venture with two other companies located in the Gulf Region. We developed a complete "cradle to grave" solution to help mitigate the environmental disaster occurring in the Gulf of Mexico. I am including a complete copy of the proposal that we submitted to BP, Federal, State and Local Agencies.

The overwhelming results of our contacts were to present the information directly to BP. On several occasions and through several offices, we sent our proposal to BP. As of today, no one from BP has contacted us to discuss our proposed solution. It is very disappointing to make so many attempts to contact them with no results.

We would be very happy to present our proposal to BP at any location and at their convenience. Any assistance that you could give us will be greatly appreciated. I, as well as our company, have enjoyed all the assistance and educational programs that LA PTAC has made available to us. I am especially excited that you are involved in the oil spill clean up effort. Thank you very much for your assistance.

Sincerely,

Chip Mitchell
Eagle Environmental Services, Inc.
18369 Petroleum Drive
Baton Rouge, LA 70809
Phone 225-757-0870
Fax 225-757-8855
Cell 225-907-3700
Chip.mitchell@eaglered.com

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The following list is composed of all the agencies and individuals that we presented our proposal to. Everyone referred us to BP.

The list is as follows:

Louisiana-

Governor Bobby Jindal's Office
Office of Homeland Security
Port of New Orleans
State Senator Troy Hebert
State Representative Karen St. Germain
State Representative Sam Jones
State Representative Gordon Dove
Plaquemine Parish President's Office
St Mary Parish President's Office
St. Bernard Parish President's Office
Jefferson Parish President's Office
Mayor of Grand Isle's Office
Louisiana National Guard
Louisiana Oil Spill Recovery

Mississippi, Alabama & Florida-

Mississippi's Governor's Office
Florida Governor's Office
City of Gulfport, MS
City of Gulf Shores, AL

Federal-

U.S. Coast Guard
U.S. Office of Homeland Security
U.S. Army Corp of Engineers LA & AL
U.S. Senator David Vitter
Congressman Charlie Melencon
Congressman Steve Scalise

Commercial/Industrial-
BP Office-Houma, LA
BP Office-Robert, LA
BP Office-Houston, TX
BP Office- Mobile, AL
BP Contractor DCR Corporation

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Page 3

BP Contractor Oil Mop
BP Contractor U S Environmental
BP Contractor Gulf Recovery Corporation
Shaw Corporation, LA

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Spill Solutions®
2700 Belleview Front
Berwick, LA 70342

10035 Hwy 43
Tatum, TX 75691

18369 Petroleum Dr.
Baton Rouge, LA 70809

Spill Solutions is a group of five well established companies with a complete "cradle to grave" solution to help mitigate the environmental disaster currently occurring in the Gulf of Mexico. Through our broad range of capabilities and attributes we have the ability to not only collect large volumes of waste but also dispose of up to 50,000 barrels a day of this waste safely and securely into permitted injection wells. With our marine base located in Berwick, LA Spill Solutions could be ready to deploy in a matter of days. Spill Solutions has answers for offshore, subsea, and the shoreline that we feel is far superior to anything being tried to date and is outlined on the attached documents for each application.

What we feel makes Spill Solutions different is access to our own barges, marine base, over 300 HAZWOPER crewmembers, three disposal injection wells, and a fleet of over two hundred truck and 130 BBL self-contained vacuum trailers. As outlined on the attached we have the capabilities to collect, separate, and down-hole massive amount of contaminates per day leaving no footprint. We feel that we truly have the only "cradle to grave" solution out there and we are sure that would be just one more thing British Petroleum doesn't have to worry about during this time.

Thank you,

Jack Smith
985.518.7480

Attachments:
Offshore Solution
Subsea Solution
Shoreline Solution
Pictures of Disposal Wells
Pictures of High Speed Separator
Pictures of High Volume Vacuum

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Complete "Cradle to Grave" High Speed Oil/Water Separation and Hazmat Disposal Offshore

Technical Specifications

I. Fleet
II. Preparation
III. Deployment Methodology & Approach
IV. Documentation

I. Fleet (including crew members and tugs)

a. Work Barge – Containing:
   i. 1 – High Speed Oil/Water Separator capable of processing up to 24,000 BBL of contaminated water per day depending on oil density
   ii. 3 – Pumps
   iii. 4 – Collection Tanks
   iv. 2 – Holding Tanks
   v. 3 – Light Plants
b. Two Contamination Barges – for holding and transport of hazardous waste to remediation facility
c. Utility Barge – for storing materials, staging, and bunking of personnel
d. Two Boom Boats – to pull boom
e. Two Hundred Vacuum Trucks and Trailers - with hazmat certified drivers
f. Other vessels available as requested or needed

II. Preparation

a. All preparation and staging can be done on the water using our utility barge and supply boats, or at our dock located in Berwick, LA.

III. Deployment Methodology & Approach

a. All vessels will be outfitted and equipped from our dock in Berwick
b. Once deployed the work barge will travel with 600 to 1,200 ft. of boom in front to gather the oil
c. Skimmers will pull contaminated water via vacuum to collection tanks
d. The contaminated water will be processed and off loaded with the waste going into a contamination barge and water pumped back in front of the boom

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e. Once off loaded the contamination will be transferred to a transport barge where it will be shipped up the Red River to be disposed of at our Hazmat Remediation Facility capable of taking 12,000 BBL per day

IV. Documentation

a. All vessels will have proper USCG documentation, and meet all the requirements for a seaworthy vessel

b. All employees and crew members are full-time oilfield employees, being Hazmat certified and approved by most of the major oilfield companies

Insert offset folio 177 here 73969.177

Complete "Cradle to Grave" Subsea High Speed Oil/Water Separation and Hazmat Disposal

Technical Specifications

V. Fleet
VI. Preparation
VII. Deployment Methodology & Approach
VIII. Documentation

V. Fleet (including crew members and tugs)

a. Work Barge – Containing:
   i. 1 – High Speed Oil/Water Separator capable of processing up to 24,000 BBL of contaminated water per day depending on oil density
   ii. 1 – Subsurface Vacuum with topside oil dispersants separation units capable of collecting at depths of 500 to 1,000 ft as needed
   iii. 3 – Pumps
   iv. 4 – Collection Tanks
   v. 2 – Holding Tanks
   vi. 3 – Light Plants
b. Two Contamination Barges – for holding and transport of hazardous waste to remediation facility
c. Utility Barge – for storing materials, staging, and bunking of personnel
d. Two Boom Boats – to pull boom
e. Two Hundred Vacuum Trucks and Trailers - with hazmat certified drivers
f. Other vessels available as requested or needed

VI. **Preparation**

a. All preparation and staging can be done on the water using our utility barge and supply boats, or at our dock located in Berwick, LA.

VII. **Deployment Methodology & Approach for Surface Water**

a. All vessels will be outfitted and equipped from our dock in Berwick
b. Once deployed the work barge will lower the high pressure collection hose to begin collecting the sunken dispersed oil and bring to the surface of the water
c. Vacuumed contaminates will then be transferred to our collection tanks

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d. The contaminated water will be separated and off loaded with the waste going into a contamination barge and water pumped back into a boomed area to be reprocessed until free of contamination
e. Once off loaded the contamination will be transferred to a transport barge where it will be shipped up the Red River to be disposed of at our Hazmat Remediation Facility capable of taking 50,000 BBL per day

VIII. Documentation

a. All vessels will have proper USCG documentation, and meet all the requirements for a seaworthy vessel
b. All employees and crew members are full-time oilfield employees, being Hazmat certified and approved by most of the major oilfield companies

IX. Special Notes

a. Equipment and procedure can be modified depending on work conditions (i.e. oil viscosity, seas, and depth)

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Complete "Cradle to Grave"
High Volume Shoreline Remediation Vacuum System
and Hazmat Disposal

Technical Specifications

IX. Fleet
X. Preparation
XI. Deployment Methodology & Approach
XII. Documentation

X. Fleet (including all crew members and tug)

a. Small Barge or Boat Containing:
   i. 1 – High Volume Shoreline Contamination Vacuum operating at 1450 CFM
   ii. Collection Tank
   iii. 1 – Light Plant
b. Two Hundred Vacuum Trucks and Trailers for transport to Hazmat Remediation Facility for proper disposal
c. 1 – Supply Boat for staging, supplies and preparation

XI. **Preparation**

a. All preparation and staging can be done on the water using utilizing our supply boat, or at our dock located in Berwick, LA.

XII. **Deployment Methodology & Approach**

a. All vessels will be outfitted and equipped from our dock in Berwick
b. Once deployed the vessel containing the High Volume Shoreline Contamination Vacuum will travel to location to start pulling contaminated water, sludge and oil
c. A mechanical arm will be stretched to move over water surface pulling contamination into the collection tank
d. Once full the contaminated water will offloaded onto a transport barge for transport up the Red River to be disposed of at our facility in East Texas

XIII. Documentation

a. All vessels will have proper USCG documentation, and meet all the requirements for a seaworthy vessel

All employees and crew members are full-time oilfield employees, being Hazmat certified and approved by most of the major oilfield companies

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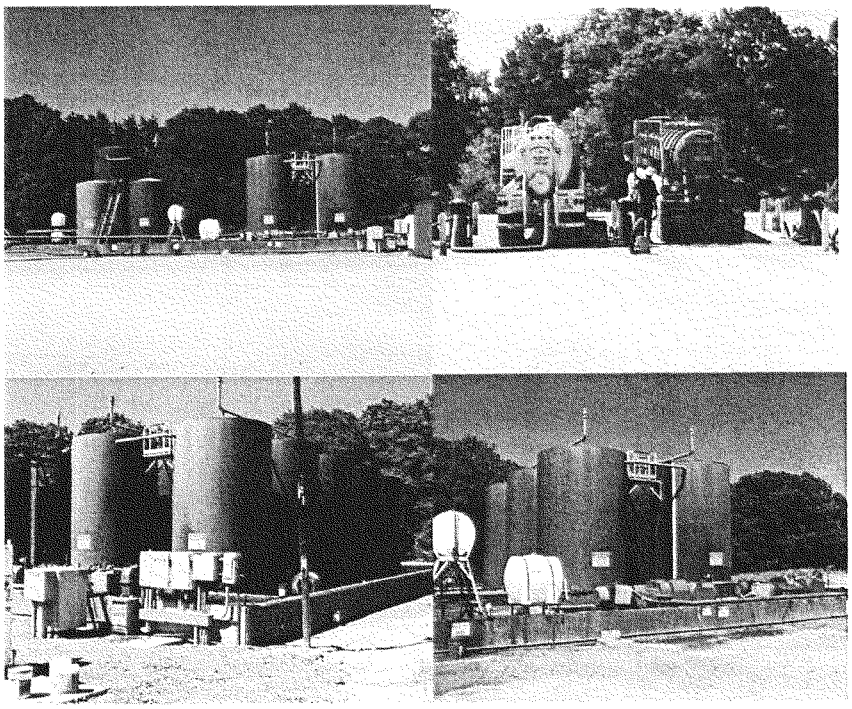

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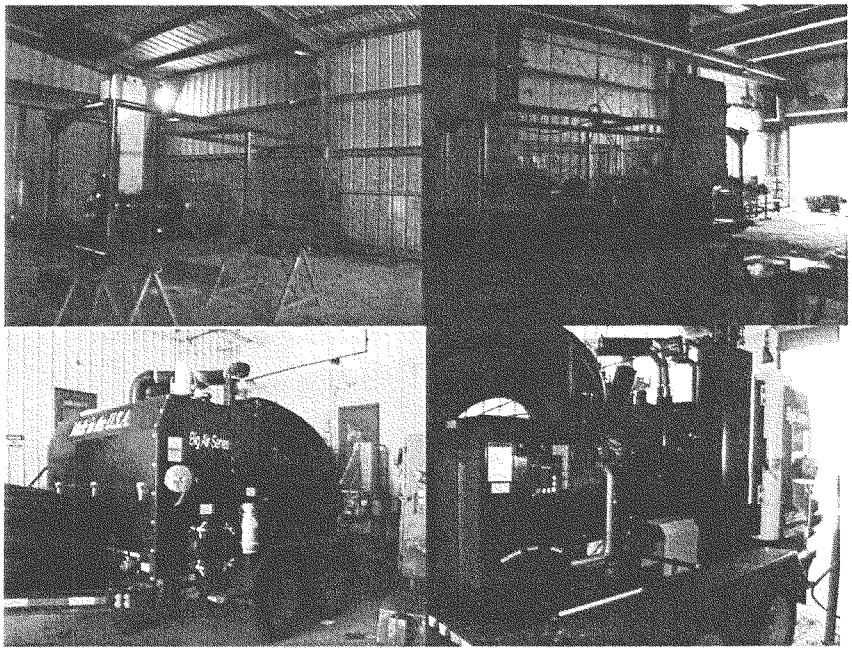

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Green Blue Environmental is a privately held Arkansas Corporation specializing in the distribution of hydrocarbon bioremediation family of products. Simply put, our product attracts indigenous hydrocarbon eating bacteria that convert the oil into carbon dioxide and water. An application of this product would clean an oil-soaked beach without leaving harmful residue or harming the environment while leaving the area pristine.

Facebook: Green Blue Environmental
Web: http://www.greenblueenvironmental.com
Address: 10 Shackleford Plaza, Ste 201
Little Rock, AR 72211
Ph: 501-537-7501
FAX: 501-975-6363
E-mail: info@greenblueenvironmental.com

Green Blue Environmental is a
Service Disabled Veteran-Owned Small Business

BIOREMEDIATION PRODUCT:
S-200 Oil Gone® patented in 2001

Products
- S-200 Oil Gone®
- S-200 Custom Blend®

Manufacturing in:
- New Jersey, USA
- Barcelona, Spain
- Sydney, Australia

Product description
- Oleophilic bioremediation accelerator for hydrocarbon spills and leaks.
- Sheen agglomerator and herding agent for oil on water

Advantages
Most cost-effective approach to cleaning up hydrocarbon spills and leaks on land and on water.
Uses indigenous bacteria and does not supply foreign bacteria to the environment which can cause future issues. Remains attached to the hydrocarbon until complete degradation to CO^2 and water is achieved.

Certifications
- US EPA NCP Product Schedule
- EU approvals
- Australia EPA
- US States agreement
- OSPAR – 'Green' Product
- Brazil EPA

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GREEN BLUE ENVIRONMENTAL

Timeline of GBE efforts

From the initial explosion of the Deep Water Horizon, Green Blue has been involved with all of the leadership DWH response team including the US Coast Guard, BP, Federal and Local Government officials. We have shown and demonstrated our proven (i. e. Exxon Valdez Oil Spill Cleanup & Prestige Supertanker Spill Cleanup along the coast of Spain) "green" bioremediation product.

The Louisiana, Alabama and Mississippi officials have all indicated that they would purchase our S-200 product if BP released funds for the cleanup. We have followed all established protocols and have a proven track record of success.

To date, no action has been taken!

In addition to myriad telephone calls, and general emails, the following represent specific examples of personal outreach by GBE.

Tuesday April 20th, 2010
Deep Water Horizon explosion

Friday April 23, 2010
Met with **Senator** Nick Gautreaux, Louisiana 26th District.

Saturday April 24, 2010
Met with David Fritz
Oil Spill Advisor Crisis & Continuity Management
BP America
150 W Warrenville Rd CMC
Naperville, IL 60563
Ph: 630-420-5880
E-mail: fritzde@bp.com
Presented product, history of successful remediation and offered samples of S-200

Met with Senator Norbert Chabert, Louisiana State Senator, District 20 about our S-200 bioremediation Product.
303 Verret Street
Houma, LA 70360
Ph: 985-858-2927
E-mail: chabertn@legis.state.la.us

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Thursday April 29th, 2010
GBE - Thursday Meeting with Senator Nick Gautreaux, Louisiana 26th District
Capitol Office
P.O. Box 94183
Baton Rouge, LA 70804
(225) 342-2040
E-mail: gautreauxn@legis.state.la.us

* President, CEO and Manufacturing President (Patent Holder) made a presentation to the Louisiana State Senate Committee on Natural Resources response to the oil spill.

Met with Roland Guidry, oil spill coordinator for State of Louisiana.
Louisiana Oil Spill Coordinator's Office
150 Third Street, Suite 405
Baton Rouge, LA 70801
Phone: (225) 219-5800
roland.guidry@la.gov

E-mailed: Eric Deer of the Mississippi Department of Environmental Quality.

Attached as an appendix is the complete GBE presentation that was given on this date.

Wednesday, May 5, 2010
John Lester, GBE President attended crawfish boil with Billy Nungesser, President of Plaquemines Parish in Venice, LA and delivered a sample of S-200 (Bioremediation Product).

Thursday, May 6, 2010
A demonstration of S-200 (Bioremediation Product) was performed for the government officials in Venice, LA.

Friday May 7, 2010
Mark Butzberger, GBE Marketing Director contacted by e-mail:
Various local state and federal officials to ask for their help getting the key people involved.

Thursday May 13, 2010
Received contact information from Nauman A. Ansari, Procurement Analyst, US Coast Guard
Office of Procurement & Oversight 2100 2nd Street, Washington, DC 20593-7112
Office: 202-475-5786

Made contact with contracting officers in Homeland Security and introduced through Senator Blanche Lincoln's office.

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May 21, 2010
Stephen Finnegan, GBE CEO mailed e-mail to Billy Nungesser, President of Plaquemines Parish and Karl Connor, BP Governmental Affairs Director for Louisiana about BP's ability to reimburse local governments for coastal cleanup efforts. It was said that $20 million would be allocated to each state
In order to get things moving.

May 24, 2010
Stuart Rabinowitz, GBE VP of Governmental Affairs got an e-mail from Tuley Wright, Staff Assistant/Scheduler for Rep. Frank Pallone, Jr. (D, Dist. 6) about trying to contact Admiral Thad Allen. Mr. Wright was not encouraging about getting through to Admiral Allen's staff.

May 25, 2010
Notice from USCG DRC Deepwater Technical Response in receipt of our technological application
From M. J. Sisson, Captain USCG, Commanding Officer, Coast Guard Research and Design Center.

June 12, 2010
Stuart Rabinowitz, VP Governmental Affairs, submitted GBE's application as an Alternative Response Technology (ART) to HorizonSupport@oegllc.com.

June 16, 2010
Notice from USCG DRC Deepwater Technical Response in receipt of our technological application
Has been accepted and From M. J. Sisson, Captain USCG, Commanding Officer, Coast Guard Research and Design Center.

Our company has followed all of BP's and the Federal Government's established protocols for presenting remediation solutions for this crisis. However, although we have received positive responses and expressed desires to acquire our product from almost every state, county/parish, and municipal officials we presented or demonstrated our product to, neither they nor we have received any affirmative action from BP or federal agencies overseeing ongoing operations. Additionally, our product has a proven history of successfully bioremediating previous oil spills. The attached presentation contains before and after pictures of our previous efforts.

Finally, our product is designed to chemically bond with the oil molecules upon contact. Once this chemical bond occurs between the oil and S-200, the oil will no longer be able to stick to beaches, plants, water fowl, and other types of marine life. The application should occur prior to the oil coming ashore. However, it can be applied with an immediate effect once the oil has come ashore as well. Our product will provide an immediate solution by stopping oil from sticking to and further contaminating the shorelines and affected wildlife.

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Green Blue Environmental
Leadership Team

Stephen Finnegan, CEO
Mr. Finnegan brings with him a distinguished 24-yr career in the military, law enforcement and has successfully created several businesses including; Finnegan & Co, which has procured millions of dollars in grant funding for non-profits, for profits and municipal governments.

Stuart L. Rabinowitz, VP Governmental Affairs
Mr. Rabinowitz brings extensive knowledge and experience of federal, state and local governments.

John Lester, President
39 year fluid drilling specialist with vast experience in the oil industry.

Mark Butzberger, Marketing Director
Mr. Butzberger serves as Marketing Director and leverages a 28-yr successful career in C-level sales and marketing. He has established relationships for Green Blue Environmental in markets including; environmental services firms, government, the military, oil & gas companies and distributors, transportation companies and port & marina managers/operators.

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GREEN BLUE ENVIRONMENTAL

Remediation Strategy
Deep Water Horizon Oil Spill

April 29, 2010

S 200 oil gone spray and walk away

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GREEN BLUE ENVIRONMENTAL

SERVICE DISABLED VETERAN OWNED SMALL BUSINESS

Mission Statement:
To market, promote, and distribute environmentally friendly products for the benefit of future generations.

Mission

- To provide environmentally responsible and effective solutions to oil pollution problems.
- Develop new products and services with both Government and Private Sector interests.
- Actively support environmental protection reforms and activities.

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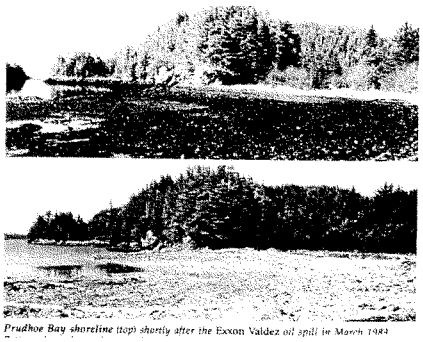
Exxon Valdez Oil Spill 1989

- March 1989 Valdez runs aground
- Exxon/ EPA test bioremediation/ bio-augmentation products
- Exxon/ EPA select Inipol EAP 22 for part of coastline cleanup
- August 1989 Exxon sprays 500 tons of "Inipol EAP 22" aka S-200 Oil Gone on 120 km of Alaskan coastline.
- 15 days later the sprayed coastline shows dramatic improvement >
- After two (2) years, the treated coastline was virtually restored

Prudhoe Bay Clean Up



Prudhoe Bay shoreline (top) shortly after the Exxon Valdez oil spill in March 1989

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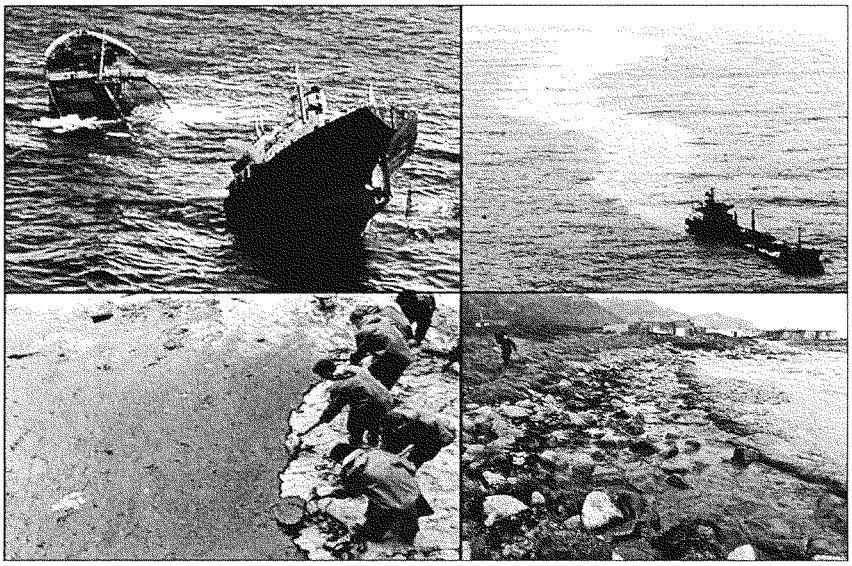
Prestige Oil Spill – Spain 2002



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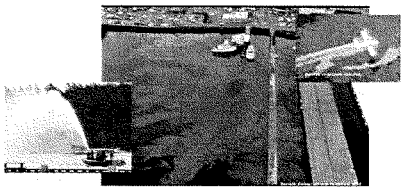
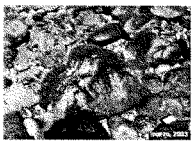
Prestige Tanker Spill Spain 2002

- **S-200 Oil Gone** was selected from 50 worldwide products as the preferred treatment to clean up the Spanish Coast.



- Spain continues to use **S-200 Oil Gone** on the cleanup.

- **S-200 Oil Gone** is the material of choice even for weathered hydrocarbons as proven by the continuing use as the clean up tool for a 5-year old spill.



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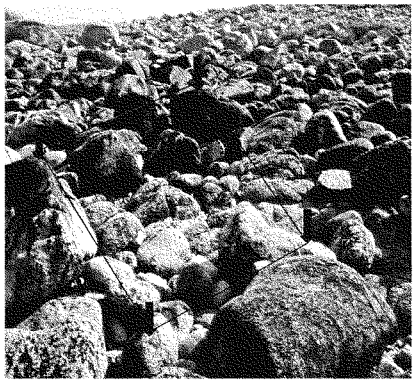
PRESTIGE TANKER SPILL ON THE COAST OF SPAIN

BEFORE APPLICATION
OF S-200



4 WEEKS AFTER ONE APPLICATION
OF S-200

#6 FUEL SPILL

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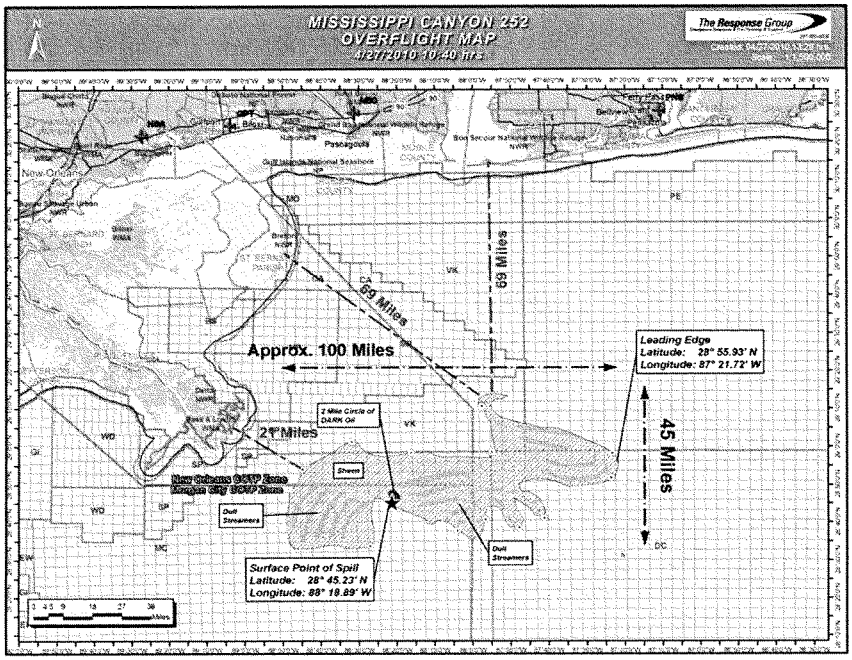
Oil Spill Status 4-27-10



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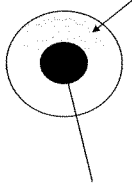
How Does it Work?



Features and Benefits of the Bio-stimulant

Oleophilic Outer Shell

-Adheres to Hydrocarbon

-Remains in the hydrocarbon environment interface and cannot be removed by rain or tidal action

-Nutrients are protected until the desired micro-colony digests the shell

Balanced Nutrient Care

-Balanced for rapid colony growth

-Sufficient nutrient supply for weeks of activity

Oil particles in water or land, including nano-sized particles can be removed by S-200 Oil Gone.

S-200 Oil Gone takes out <u>all</u> oil particulate contamination in polluted area.

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S-200 and Oil "Chocolate Mouse"

In a 'chocolate mousse' scenario, the biological degradation is greatly reduced, probably due to limitations of the interface for microbial attack. This is particularly frequent in cases of coastal pollution resulting from an ocean spill.

A net reduction in the surface tension between the oil and sea water has been observed in the presence of S-200. This reduction is linked to the fatty acid in the micro-emulsion. This effect allows the water / hydrocarbon interface to be increased reducing the emulsifying consequence of the 'chocolate mousse'.

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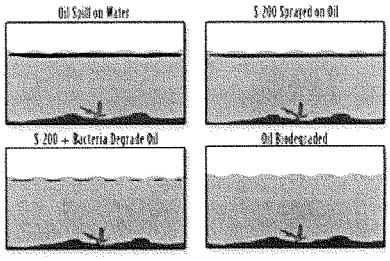
oil gone

ON WATER



- **S-200 Oil Gone**, when mixed into any oil polluted water, instantly surrounds and stabilizes any oil particle.
- On water using **S-200 Oil Gone**, after the instantaneous encapsulation, the particles will immediately cross link and form large unbreakable flocs. This effectively removes the sheen and reduces the spill area.
- **S-200 Oil Gone**, immediately feeds oil eating bacteria that multiplies exponentially to totally dominate the surrounding environment and in turn quickly biodegrades the oil to form environmentally safe CO^2 and water.

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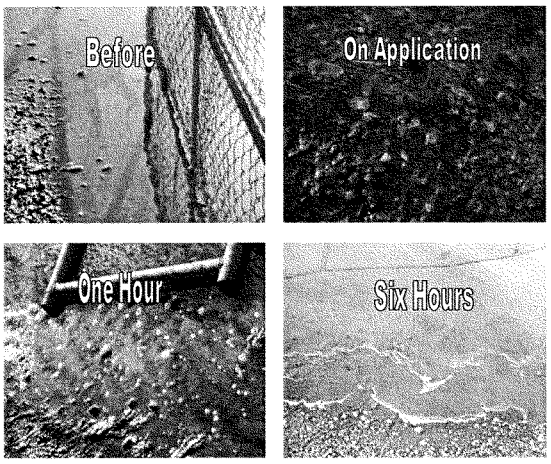
Application on Water



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Land Applications

Remediates new and existing oil spills:

1. Gas Station site remediation.
2. Oil leaks at source from petrol storage pipes and header sites.
3. Treatment of surface oil at base interceptor tanks.
4. Tank farm base soil hydrocarbon remediation
5. Vehicles maintenance, aircraft and plant spills.
6. Sites previously considered too difficult to resolve
   i.e. hydrocarbon pollution below water table.

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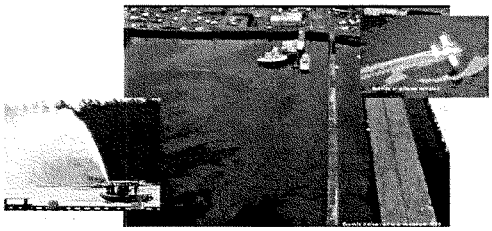
Application of S-200

The only thing needed to make S-200 work is to put it in contact with a hydrocarbon in an environment where bacteria can live. Here is some application methods based on location type:



Water: For application on sheens, completely cover the sheen with a light coating of S-200 to obtain full coverage. The sheen/S-200 combination will be exponentially reduced in surface area by agglomerating into small gelatinous masses which can be picked up using traditional skimming equipment or they will bioremediate on the water surface.

Hard surface: apply with a back pack pressure sprayer.

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Bioremediation Benefits

- Ecologically safe : It is “nature’s way” of solving contamination problems.
- Bioremediation is cost effective. The process is generally 60 – 70% less costly than other technologies.
- Little disruption of surrounding, non-contaminated areas
- Virtually no investment in “capital equipment”.
- Can remediate areas that are not easily accessible or are inaccessible to other technologies.

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Bioremediation Benefits (cont.)

- Bioremediation can be accomplished “in-place”, eliminating the hazard of “off site contamination caused by digging, hauling and transporting contaminants to other areas.
- Air quality and air pollution concerns from volatile chemical evaporation are eliminated.
- After bioremediation is completed, the environment is virtually restored to its pristine condition.
- The process poses no health or safety risks to your employees thereby reducing insurance costs.

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