

Calendar No. 403

108TH CONGRESS }
1st Session

SENATE

{ REPORT
108-203

OCEANS AND HUMAN HEALTH ACT

R E P O R T

OF THE

COMMITTEE ON COMMERCE, SCIENCE, AND
TRANSPORTATION

ON

S. 1218



NOVEMBER 19, 2003.—Ordered to be printed

U.S. GOVERNMENT PRINTING OFFICE

29-010

WASHINGTON : 2003

SENATE COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION

ONE HUNDRED EIGHTH CONGRESS

FIRST SESSION

JOHN MCCAIN, Arizona, *Chairman*

TED STEVENS, Alaska	ERNEST F. HOLLINGS, South Carolina
CONRAD BURNS, Montana	DANIEL K. INOUE, Hawaii
TRENT LOTT, Mississippi	JOHN D. ROCKEFELLER IV, West Virginia
KAY BAILEY HUTCHISON, Texas	JOHN F. KERRY, Massachusetts
OLYMPIA J. SNOWE, Maine	JOHN B. BREAUX, Louisiana
SAM BROWNBACK, Kansas	BYRON L. DORGAN, North Dakota
GORDON SMITH, Oregon	RON WYDEN, Oregon
PETER G. FITZGERALD, Illinois	BARBARA BOXER, California
JOHN ENSIGN, Nevada	BILL NELSON, Florida
GEORGE ALLEN, Virginia	MARIA CANTWELL, Washington
JOHN E. SUNUNU, New Hampshire	FRANK LAUTENBERG, New Jersey

JEANNE BUMPUS, *Staff Director and General Counsel*

ANN BEGEMAN, *Deputy Staff Director*

ROBERT W. CHAMBERLIN, *Chief Counsel*

KEVIN D. KAYES, *Democratic Staff Director and Chief Counsel*

GREGG ELIAS, *Democratic General Counsel*

Calendar No. 403

108TH CONGRESS }
1st Session }

SENATE

{ REPORT
108-203

OCEANS AND HUMAN HEALTH ACT

NOVEMBER 19, 2003.—Ordered to be printed

Mr. MCCAIN, from the Committee on Commerce, Science, and
Transportation, submitted the following

R E P O R T

[To accompany S. 1218]

The Committee on Commerce, Science, and Transportation, to which was referred the bill (S. 1218) to provide for Presidential support and coordination of interagency ocean science programs and development and coordination of a comprehensive and integrated United States research and monitoring program, having considered the same, reports favorably thereon with an amendment (in the nature of a substitute) and recommends that the bill (as amended) do pass.

PURPOSE OF THE BILL

The purpose of S. 1218, the Oceans and Human Health Act, is to establish a Federal research program that examines ocean resources and their applications to human health.

BACKGROUND AND NEEDS

In recent years, we have gained a renewed appreciation for the importance of the oceans to our health and well-being. We now recognize that human health is one area in which the oceans exert major influences that are both positive and negative. Oceans and human health is a growing field of science focused on detecting potential marine-based contaminants, preventing associated illness, and developing products from the ocean that will enhance human well-being. Understanding the relationship between the oceans and human health is a challenging interdisciplinary field of study, and it is increasingly clear that it is in the national benefit to provide Federal support and coordination of this research effort. Currently, a number of Federal agencies share responsibility and expertise for

this field of science, requiring that capabilities be harnessed across such diverse entities as the National Oceanic and Atmospheric Administration (NOAA), the National Science Foundation (NSF), and the National Institute of Environmental Health Sciences (NIEHS).

The rich biodiversity of marine organisms represents an important biomedical resource, a promising source of novel compounds with therapeutic potential to combat cancer and fight infectious diseases, and a potentially significant contribution to the national economy. A 1999 National Research Council report, *From Monsoons to Microbes*, noted that nature has been the traditional source of new pharmaceuticals and found that over 50 percent of the marketed drugs are extracted from natural sources or produced using natural products. While the oceans are a repository for much of this biodiversity with potential biomedical applications, little of it has been catalogued or studied. One important aspect that we have yet to fully explore is the potential of marine life to produce chemicals for treating diseases. There are only three marine compounds now in clinical use—and these were developed in the 1950s.

In contrast to these life-supporting applications of ocean resources, oceans also harbor disease-causing organisms and other harmful conditions that impair marine and human life. For example, harmful algal blooms, disease-causing parasites, and toxic marine compounds can infect seafood or otherwise harm human health when handled or ingested. Hypoxic conditions or “dead zones”, in which dissolved oxygen is depleted in the water column, further impair the oceans’ ability to support life and can cause massive fish kills. Collectively, these threats to marine and human health can result in substantial economic losses to coastal communities and lead to severe illness, even death, when contaminated seafood is consumed.

Various marine processes can affect the distribution and proliferation of disease-causing organisms and their vectors through estuarine, coastal, and ocean basin circulation, tides, and temperatures (influencing the occurrence of harmful algal blooms, among other health risks). Human activities contribute to the problem through sewage disposal, nutrient runoff from agriculture and other land uses, and the transfer of organisms via ballast water (e.g. the marine pathogenic bacteria *Vibrio cholera*). Climate and weather systems also can cause diseases to spread through short dramatic events such as tsunamis, storm surges, heavy rains and winds, as well as long-term fluctuations related to oceanic trends (e.g. El Nino, Pacific Decadal Oscillation). Because the majority of the world’s population lives in coastal areas, the hazards associated with these events have a large impact on public health, and understanding their role will be important in the development of predictive forecasting and prevention approaches.

In addition, research is needed to understand the increasing detection of disease in marine life, including corals, marine mammals, sea turtles, and echinoderms. Study of these species may provide information on both the status of contaminants in the marine environment and the mechanisms of marine disease. For example, marine mammals have been known to be impacted by a variety of toxins and have experienced mortality, reproductive failure, and depression of the immune system, but little is known about the effects of contaminants and diseases on these species. Being top

predators, marine mammals have a direct application to human health because they serve as useful indicators of health risks in the marine environment and provide means of determining similar mechanisms of disease in humans and developing potential treatments.

Much work is needed to understand the connections between the oceans and human health in order to better respond to future health needs and threats. To be successful, a research program must integrate disciplines, bringing together oceanographers and biomedical researchers to better understand marine processes, identify marine pathogens, reduce public health risks, enhance our biomedical capabilities, and expand the promise of therapeutic marine derived pharmaceuticals.

In fiscal year (FY) 2003, NOAA received appropriations of \$8 million to develop an oceans and human health initiative. Within NOAA, many programs and laboratories perform research and related activities that could contribute significantly to a national research effort, but such efforts have not been coordinated within NOAA or among Federal agencies. Establishment of a coordinated, interdisciplinary program consisting of nationally-recognized research centers and an external interdisciplinary research grant program is expected to enhance the NOAA program. In addition, last November, the NIEHS and the NSF invited applications for research programs to explore the relationship between marine processes and public health. The joint initiative commits \$6 million annually to establish centers of excellence focusing on harmful algal blooms, water and vector-borne diseases, and marine pharmaceuticals.

S. 1218 would establish a national Interagency Oceans and Human Health Research Program (Interagency OHH Program) to coordinate research efforts and ensure an adequate Federal investment in this growing field of research. The bill would direct this program to be coordinated through the National Science and Technology Council (NSTC), which would submit to Congress within one year of enactment a 10-year implementation plan for coordinated Federal activities under the Interagency OHH Program. The bill also would direct NOAA to create an Oceans and Human Health (OHH) Initiative that would coordinate and implement interdisciplinary research and activities within NOAA on this topic. This OHH Initiative would be guided by an advisory panel, establish centers of excellence, and provide external research grants on NOAA mission-related aspects of oceans and human health. In addition, the bill would direct the Secretary of Commerce to establish a coordinated public information and outreach program with the Food and Drug Administration (FDA), Environmental Protection Agency (EPA), Centers for Disease Control (CDC), and the States to provide information on potential ocean-related human health risks, and it would authorize funding for the NOAA OHH Initiative for FYs 2004 through 2008 and for the public information and risk assessment program for FYs 2004 through 2007.

LEGISLATIVE HISTORY

S. 1218 was introduced by Senators Hollings and Stevens on June 10, 2003, and referred to the Senate Committee on Commerce, Science, and Transportation. Co-sponsors include Senators

Inouye, Breaux, Cantwell, and Bill Nelson. On June 26, 2003, the bill was considered by the Committee in an open executive session. The Committee, without objection, ordered S. 1218 be reported with an amendment in the nature of a substitute.

ESTIMATED COSTS

In accordance with paragraph 11(a) of rule XXVI of the Standing Rules of the Senate and section 403 of the Congressional Budget Act of 1974, the Committee provides the following cost estimate, prepared by the Congressional Budget Office:

S. 1218—Oceans and Human Health Act

Summary: S. 1218 would authorize the appropriation of \$89 million through fiscal year 2008 for research on oceans and human health issues. This funding would be used by the National Oceanic and Atmospheric Administration (NOAA) to finance an oceans and human health initiative and a public health information and outreach program.

Assuming appropriation of the authorized amounts, CBO estimates that implementing S. 1218 would cost the federal government \$5 million in 2004 and \$80 million over the 2004–2008 period. (The remaining \$9 million would be spent in 2009.) Enacting the bill would not affect direct spending or revenues.

The bill contains no intergovernmental or private-sector mandates as defined in the Unfunded Mandates Reform Act (UMRA) and would impose no costs on state, local, or tribal governments.

Estimated Cost to the Federal Government: The estimated budgetary impact of S. 1218 is shown in the following table. The costs of this legislation fall within budget function 300 (natural resources and environment).

	By fiscal year, in millions of dollars—				
	2004	2005	2006	2007	2008
Authorization Level	13	15	18	23	20
Estimated Outlays	5	10	18	22	25

Basis of Estimate: For this estimate, CBO assumes that the amounts authorized by the legislation will be appropriated for each fiscal year and that outlays will follow historical spending patterns for similar activities.

The bill would authorize the appropriation of between \$10 million and \$20 million a year over the 2004–2008 period for NOAA’s oceans and human health initiative. Most of those funds would be used to provide grants to public and private research centers and individuals. (For fiscal year 2003, NOAA received an appropriation of \$8 million to provide research grants under the oceans and human health initiative.) The bill also would authorize the appropriation of \$3 million a year over the 2004–2007 period for NOAA to collect and disseminate research findings and other information on the relationship between oceans and human health.

Intergovernmental and private-sector impact: S. 1218 contains no intergovernmental or private-sector mandates as defined in UMRA and would impose no costs on state, local, or tribal governments.

Estimate prepared by: Federal Costs; Deborah Reis; Impact on State, Local, and Tribal Governments: Marjorie Miller; and Impact on the Private Sector: Paige Piper/Bach.

Estimate approved by: Robert A. Sunshine, Assistant Director for Budget Analysis.

REGULATORY IMPACT STATEMENT

In accordance with paragraph 11(b) of rule XXVI of the Standing Rules of the Senate, the Committee provides the following evaluation of the regulatory impact of the legislation, as reported:

NUMBER OF PERSONS COVERED

The reported bill would require the development of a Federal interagency program on oceans and human health. It does not authorize any new regulations and therefore should not subject any individuals or businesses to new regulations.

ECONOMIC IMPACT

Section 6 of the reported bill would authorize \$10,000,000 for FY 2004, \$12,000,000 for FY 2005, \$15,000,000 for FY 2006, \$20,000,000 for FY 2007, and \$20,000,000 for FY 2008 for the Secretary of Commerce to carry out the NOAA OHH Initiative. It also would authorize \$5,000,000 for each of FYs 2004 through 2007 for the public information and risk assessment program. These funding levels are relatively modest and are not expected to have an inflationary impact on the nation's economy.

PRIVACY

The reported bill would not have any adverse impact on the personal privacy of individuals.

PAPERWORK

S. 1218 would not impose any new paperwork requirements on private citizens or businesses that do not choose to seek research grants as authorized under section 4; entities choosing to seek research grants may be subject to some changes in the paperwork requirements of the program.

SECTION-BY-SECTION ANALYSIS

Section 1. Short Title.

This section cites the short title as the "Oceans and Human Health Act".

Section 2. Findings and Purposes.

This sections includes a number of Congressional findings, as follows:

- (1) the oceans' biodiversity provides essential resources;
- (2) biodiversity research helps scientists understand human and marine health;
- (3) oceans drive climate and weather that can affect human health;
- (4) oceans act as a vector for transmission of human diseases;

(5) harmful algal bloom and hypoxia events have increased, threatening marine resources and coastal communities;

(6) Federal programs and resources support research on these issues, with limited progress; and

(7) national investment in a research and monitoring program on oceans and human health would enhance public health.

The purposes of this Act are to provide for presidential support and coordination of interagency ocean sciences programs, and development and coordination of a research and monitoring program on the role of oceans in human health.

Section 3. Interagency Oceans and Human Health Research Program.

This section would provide for the establishment of an Interagency OHH Program to be coordinated and supported by the NSTC.

Subsection (a) would direct the NSTC to establish a Committee on Oceans and Human Health comprised of at least one representative from NOAA, NSF, National Institutes of Health (NIH), CDC, EPA, FDA, Department of Defense (DoD), Department of Homeland Security (DHS), and other agencies and departments deemed appropriate by the NSTC. This section also would provide for the biennial selection of a Chairman of the Committee, who shall represent an agency that contributes substantially to the Interagency OHH Program.

Subsection (b) would direct the NSTC, through the Committee on Oceans and Human Health, to submit to Congress, within one year of enactment, a 10-year implementation plan for coordinated Federal activities under the Interagency OHH Program. In developing the plan, the Committee would be required to consult with the Inter-Agency Task Force on Harmful Algal Blooms and Hypoxia, and nothing in the plan required under this section would duplicate or supercede that Task Force's work. The implementation plan would complement the ongoing activities of NOAA, NSF, NIEHS, and other departments and agencies, and—

(1) establish the Federal research goals and priorities related to oceans and human health;

(2) describe specific activities required to achieve such goals;

(3) identify relevant Federal programs and activities that would contribute to the Interagency OHH Program;

(4) consider and use reports and studies conducted by Federal agencies and departments, the National Research Council, the Ocean Research Advisory Panel, the United States Commission on Ocean Policy, and other entities;

(5) make recommendations for the coordination of national and international programs; and

(6) estimate Federal funding for research activities to be conducted under the Interagency OHH Program.

Subsection (c) would outline the scope of the Interagency OHH Program, which is to include the following activities—

(1) interdisciplinary and coordinated research and activities to improve our understanding of how ocean processes and marine organisms can relate to human health and contribute to medicine and research;

(2) coordination with the National Ocean Research Leadership Council (established under 10 U.S.C. 7902(a)) to ensure any ocean and coastal observing system provides information necessary to monitor, predict, and reduce marine public health problems;

(3) development through partnerships of new technologies and approaches for detecting and reducing hazards to human health from ocean sources and for strengthening understanding of the value of marine biodiversity to biomedicine; and

(4) support for scholars, trainees, and educational opportunities that encourage an interdisciplinary and international approach to marine life research.

Section 4. National Oceanic and Atmospheric Administration Oceans and Human Health Initiative.

This section would authorize a NOAA initiative on Oceans and Human Health that would coordinate NOAA activities on oceans and human health as well as coordinate with the Interagency OHH Program.

Subsection (a) would direct the Secretary of Commerce to develop an OHH Initiative, consistent with the interagency program developed under section 3, that would coordinate and implement research and activities within NOAA related to the role of the oceans in human health. In establishing the program, the Secretary would be required to consult with other Federal agencies conducting integrated ocean health research or research in related areas, including the CDC, NSF, and NIEHS. The NOAA OHH Initiative would provide support for program and research coordination, an advisory panel, NOAA national center(s) of excellence, research grants, and distinguished scholars and traineeships.

Under subsection (b) of section 4, the Secretary would establish an oceans and human health advisory panel to assist in the NOAA OHH Initiative development and implementation. Membership of the advisory group would include a balanced representation of individuals with multi-disciplinary expertise in the marine and biomedical sciences. The subsection would provide that the Federal Advisory Committee Act (5 U.S.C. App. 1) shall not apply to the panel.

Subsection (c) would direct the Secretary to, through a competitive process, establish and support centers of excellence that strengthen NOAA's capabilities to carry out programs and activities related to the oceans' role in human health. These centers shall complement and be in addition to any centers of excellence for oceans and human health established through NSF or NIEHS. The centers would focus on areas related to NOAA missions, including the use of marine organisms as indicators for marine environmental health, ocean pollutants, marine toxins and pathogens, harmful algal blooms, hypoxia, seafood testing, drug discovery, biology and pathobiology of marine mammals, and such disciplines as marine genomics, marine environmental microbiology, ecological chemistry, and conservation medicine. The Secretary is directed to consider the need for geographic representation and to encourage proposals that have strong scientific and interdisciplinary merit and partnership approaches.

Subsection (d) would authorize the Secretary of Commerce to provide grants for research and projects on oceans and human health that complement or strengthen NOAA-related programs and activities. In implementing this subsection, the Secretary is directed to consult with the oceans and human health advisory panel and the National Sea Grant College Program, and may work with other agencies in the Interagency OHH Program to establish joint criteria for such research projects. This subsection specifies that the grants shall be awarded through a peer-review process that may be conducted jointly with other agencies participating in the Interagency OHH Program or under the National Oceanographic Partnership Program (10 U.S.C. 7901).

Subsection (e) would direct the Secretary to provide financial assistance to support distinguished scholars working in collaboration with NOAA scientists and facilities. The Secretary also would be authorized to establish a training program, in consultation with NIEHS and NSF, for scientists early in their careers who are interested in oceans and human health.

Section 5. Public Information and Outreach.

Subsection (a) of this section would direct the Secretary of Commerce, in consultation with the CDC, FDA, EPA, and the States, to design and implement a national public information and outreach program on potential ocean-related human health risks. The outreach program would collect and analyze information, disseminate the results (to relevant Federal, State, public, industry or other interested parties), provide advice regarding precautions against illness or hazards, and make recommendations on observing systems that would support the program.

Subsection (b) would require the Secretary, in consultation with the CDC, FDA, EPA, and the States, to assess health risks and benefits associated with the consumption and handling of seafood.

Section 6. Authorization of Appropriations.

This section would authorize funding for the NOAA OHH Initiative established under section 4, and the public information and risk assessment program established under section 5.

Subsection (a) would authorize funding to be appropriated to the Secretary of Commerce to carry out the initiative under section 4 as follows: \$10,000,000 for FY 2004; \$12,000,000 for FY 2005; \$15,000,000 for FY 2006; \$20,000,000 for FY 2007; and \$20,000,000 for FY 2008.

Subsection (b) would authorize \$5,000,000 for each of FYs 2004 through 2007 for the public information and risk assessment program established under section 5.

CHANGES IN EXISTING LAW

In compliance with paragraph 12 of rule XXVI of the Standing Rules of the Senate, the Committee states that the bill as reported would make no change to existing law.