

DETECT FENTANYL AND XYLAZINE  
ACT OF 2024

—  
R E P O R T

OF THE

COMMITTEE ON HOMELAND SECURITY AND  
GOVERNMENTAL AFFAIRS  
UNITED STATES SENATE

TO ACCOMPANY

S. 4419

TO REQUIRE THE SCIENCE AND TECHNOLOGY DIRECTORATE  
IN THE DEPARTMENT OF HOMELAND SECURITY TO DEVELOP  
GREATER CAPACITY TO DETECT, IDENTIFY, AND DISRUPT  
ILLICIT SUBSTANCES IN VERY LOW CONCENTRATIONS



DECEMBER 2, 2024.—Ordered to be printed

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{ REPORT  
118-253

DETECT FENTANYL AND XYLAZINE ACT OF 2024

DECEMBER 2, 2024.—Ordered to be printed

Mr. PETERS, from the Committee on Homeland Security and  
Governmental Affairs, submitted the following

**R E P O R T**

[To accompany S. 4419]

[Including cost estimate of the Congressional Budget Office]

The Committee on Homeland Security and Governmental Affairs, to which was referred the bill (S. 4419) to require the Science and Technology Directorate in the Department of Homeland Security to develop greater capacity to detect, identify, and disrupt illicit substances in very low concentrations, having considered the same, reports favorably thereon with an amendment, in the nature of a substitute, and an amendment to the title and recommends that the bill, as amended, do pass.

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I. PURPOSE AND SUMMARY

S. 4419, the *Detection Equipment and Technology Evaluation to Counter the Threat of Fentanyl and Xylazine Act of 2024*, or the *DETECT Fentanyl and Xylazine Act of 2024*, amends the *Homeland Security Act of 2002* to add to the responsibilities of the Under Secretary for Science and Technology (S&T) at the Department of Homeland Security (DHS). Specifically, the bill requires the Under Secretary for S&T to carry out research, development, testing, evaluation, and cost-benefit analyses to improve effectiveness and effi-

ciency of equipment used for the detection of drugs, such as fentanyl and xylazine. It also directs the Under Secretary to carry out research, development, testing, evaluation, and cost-benefit analyses on the effectiveness and efficiency of research libraries used to detect drugs, such as fentanyl and xylazine. In carrying out these activities, the bill requires the Under Secretary for S&T to follow recommendations and guidelines described in the Artificial Intelligence Risk Management Framework. The Under Secretary is also directed to establish priorities for S&T’s work based on latest available information, including specific drugs identified as threats by federal agencies.

## II. BACKGROUND AND NEED FOR THE LEGISLATION

According to data from the Centers for Disease Control and Prevention, with the exception of a slight decrease in 2023, drug overdose deaths in the United States have generally increased in recent years.<sup>1</sup> Synthetic opioids, including fentanyl, are a leading contributor to those deaths, accounting for an estimated 74,000 deaths in 2023.<sup>2</sup> The total number of Americans harmed by synthetic opioids through poisoning (e.g., non-fatal overdoses) is higher, though obtaining firm statistics is challenging due to the lack of point of care testing and variations in hospital use of discharge diagnosis codes.<sup>3</sup> The fentanyl manufactured and sold by criminal organizations is generally found in the form of powder or made into pills that look like medication, such as oxycodone.<sup>4</sup> In many cases, Americans purchasing these drugs may believe they are purchasing, and consuming, legitimate prescription medication.<sup>5</sup> Because these synthetic opioids are produced in clandestine labs by criminal organizations, there can be variation in their chemical makeup and potency, making it difficult for law enforcement and public health agencies to identify substances and respond to emerging threats.<sup>6</sup> For example, in April 2023, the Director of the Office of National Drug Control Policy designated fentanyl that has been combined with or “occurring with” xylazine, a veterinary tranquilizer, as an emerging drug threat. This designation came following increases in drug overdose deaths involving xylazine.<sup>7</sup>

The 2022 *National Interdiction Command and Control Plan* directed National Drug Control Program Agencies, such as DHS,

<sup>1</sup>Centers for Disease Control and Prevention, National Center for Health Statistics: U.S. Overdose Deaths Decrease in 2023, First Time Since 2018 (May 15, 2024); National Vital Statistics System ([www.cdc.gov/nchs/nvss/vsrr/drug-overdose-data.htm](http://www.cdc.gov/nchs/nvss/vsrr/drug-overdose-data.htm)) (accessed Oct. 9, 2024).

<sup>2</sup>Centers for Disease Control and Prevention, National Center for Health Statistics: U.S. Overdose Deaths Decrease in 2023, First Time Since 2018 (May 15, 2024).

<sup>3</sup>Analysis of trends and usage of ICD–10-CM discharge diagnosis codes for poisonings by fentanyl, tramadol, and other synthetic narcotics in emergency department data. *Addictive Behaviors Reports*, December 2022 (Vol. 16) ([www.sciencedirect.com/science/article/pii/S2352853222000591?via%3Dihub](http://www.sciencedirect.com/science/article/pii/S2352853222000591?via%3Dihub))

<sup>4</sup>Department of Justice/Drug Enforcement Administration, Drug Fact Sheet: Fentanyl (April 2020) ([www.dea.gov/sites/default/files/2020-06/Fentanyl-2020\\_0.pdf](http://www.dea.gov/sites/default/files/2020-06/Fentanyl-2020_0.pdf)); Drug Enforcement Administration, National Drug Threat Assessment 2024 (DEA–DCT–DIR–010–24) (May 2024).

<sup>5</sup>Drug Enforcement Administration, National Drug Threat Assessment 2024 (DEA–DCT–DIR–010–24) (May 2024).

<sup>6</sup>Drug Enforcement Administration, National Drug Threat Assessment 2024 (DEA–DCT–DIR–010–24) (May 2024); United Nations Office on Drugs and Crime, *World Drug Report 2024: Key Findings and Conclusions* (2024) ([www.unodc.org/documents/data-and-analysis/WDR\\_2024/WDR24\\_Key\\_findings\\_and\\_conclusions.pdf](http://www.unodc.org/documents/data-and-analysis/WDR_2024/WDR24_Key_findings_and_conclusions.pdf)).

<sup>7</sup>The White House, Executive Office of the President, Office of National Drug Control Policy, *Fentanyl Adulterated or Associated with Xylazine Response Plan* (July 2023) ([www.whitehouse.gov/wp-content/uploads/2023/07/FENTANYL-ADULTERATED-OR-ASSOCIATED-WITH-XYLAZINE-EMERGING-THREAT-RESPONSE-PLAN-Report-July-2023.pdf](http://www.whitehouse.gov/wp-content/uploads/2023/07/FENTANYL-ADULTERATED-OR-ASSOCIATED-WITH-XYLAZINE-EMERGING-THREAT-RESPONSE-PLAN-Report-July-2023.pdf)).

with developing or increasing utilization of advanced technologies for drug detection, including to share with other domestic law enforcement partners.<sup>8</sup> DHS S&T is led by the Under Secretary of Science and Technology and supports the operational components of the Department, such as U.S. Customs and Border Protection (CBP), by conducting research, development, testing, and evaluations. S&T also works closely with partners across the federal government, academia, and industry, and develops and tests new technologies to address emerging threats and capability gaps, including drug detection technologies.<sup>9</sup> For example, CBP utilizes handheld “chemical analyzers” for preliminary results of samples taken from seizures suspected of being drugs.<sup>10</sup>

In 2023, S&T reported that low-purity drug mixtures may negatively impact the performance of existing technologies used by the components of DHS and other first responders.<sup>11</sup> To address this challenge, S&T began working with partners, including the Pacific Northwest National Laboratory (PNNL), to evaluate existing detection technologies and better understand how to enhance their effectiveness. Testing performed by PNNL determined that multiple technologies are necessary to accurately determine if fentanyl is present in certain samples with low purity levels.<sup>12</sup> The ability to make accurate identifications of samples help keep personnel safe, interrupt the supply chain of dangerous drugs like fentanyl, and support prosecution of those engaging in smuggling and trafficking.<sup>13</sup> The *DETECT Fentanyl and Xylazine Act of 2024* will ensure that S&T can continue prioritizing the improvement of drug detection equipment for serious public safety threats such as fentanyl and xylazine by adding it to the Under Secretary’s responsibilities and authorities.

### III. LEGISLATIVE HISTORY

Senator John Cornyn (R–TX) introduced S. 4419, the *Detection Equipment and Technology Evaluation to Counter the Threat of Fentanyl and Xylazine Act of 2024*, or the *DETECT Fentanyl and Xylazine Act of 2024*, on May 23, 2024, with original cosponsors Senator Jon Ossoff (D–GA), Senator Kyrsten Sinema (I–AZ), and Senator James Lankford (R–OK). The bill was referred to the Committee on Homeland Security and Governmental Affairs. Senator Jackie Rosen (D–NV) and Senator Jerry Moran (R–KS) later joined as cosponsors of the bill on July 23, 2024, and September 16, 2024, respectively.

<sup>8</sup>The White House, Executive Office of the President, Office of National Drug Control Policy, National Interdiction Command and Control Plan (2022) ([www.whitehouse.gov/wp-content/uploads/2022/09/2022-National-Interdiction-Command-and-Control-Plan-NICCP.pdf](http://www.whitehouse.gov/wp-content/uploads/2022/09/2022-National-Interdiction-Command-and-Control-Plan-NICCP.pdf)).

<sup>9</sup>Department of Homeland Security, Science and Technology Directorate; Budget Overview Fiscal Year 2025 Congressional Justification (Mar. 8, 2024).

<sup>10</sup>U.S. Customs and Border Protection, Frontline Digital Magazine, CBP: America’s Frontline Against Fentanyl ([www.cbp.gov/frontline/cbp-america-s-front-line-against-fentanyl](http://www.cbp.gov/frontline/cbp-america-s-front-line-against-fentanyl)) (accessed Oct. 9, 2024).

<sup>11</sup>Department of Homeland Security, Science and Technology Directorate, Rapid Technologies for Drug Interdiction: Research and Development (July 10, 2023) ([www.dhs.gov/sites/default/files/2023-08/23\\_0710\\_s%26t\\_%20rapid\\_technologies\\_for\\_drug\\_interdiction\\_r\\_and\\_d.pdf](http://www.dhs.gov/sites/default/files/2023-08/23_0710_s%26t_%20rapid_technologies_for_drug_interdiction_r_and_d.pdf)).

<sup>12</sup>Pacific Northwest National Laboratory, Performance Assessment of Field-Portable Instruments and Assays for Fentanyl and Fentanyl-Related Compounds: Test Report (Sept. 2023) ([www.pnnl.gov/sites/default/files/media/file/ST\\_PNNL\\_Fentanyl\\_Reference\\_Spectra\\_Final\\_Report\\_CLEARED\\_Public\\_Release.pdf](http://www.pnnl.gov/sites/default/files/media/file/ST_PNNL_Fentanyl_Reference_Spectra_Final_Report_CLEARED_Public_Release.pdf)).

<sup>13</sup>U.S. Customs and Border Protection, Frontline Digital Magazine, CBP: America’s Frontline Against Fentanyl ([www.cbp.gov/frontline/cbp-america-s-front-line-against-fentanyl](http://www.cbp.gov/frontline/cbp-america-s-front-line-against-fentanyl)) (accessed Oct. 9, 2024).

The Committee considered S. 4419 at a business meeting on September 18, 2024. During the business meeting, Senator Ossoff offered a substitute amendment to the bill, which made technical changes. It also directed the Under Secretary for S&T to consider specific drugs identified by DHS's most recent Homeland Threat Assessment when developing priorities for S&T's research, development, testing and evaluation. It also added a rule of construction to the bill stating that nothing in the bill can be construed to limit the authority of an agency currently managing, overseeing, or involved in drug equipment and reference libraries. The Committee adopted the Ossoff substitute amendment by unanimous consent with Senators Peters, Carper, Hassan, Sinema, Rosen, Ossoff, Blumenthal, Butler, Paul, Lankford, Romney, Scott, Hawley, and Marshall present.

Senator Ossoff then offered Ossoff amendment 2, which changed the long title of the bill to "A bill to require the Science and Technology Directorate in the Department of Homeland Security to develop greater capacity to detect and identify illicit substances in very low concentrations." The Committee adopted Ossoff amendment 2 by unanimous consent with Senators Peters, Carper, Hassan, Sinema, Rosen, Ossoff, Blumenthal, Butler, Paul, Lankford, Romney, Scott, Hawley, and Marshall present.

Senator Hawley offered Hawley amendment 2, which requires the Director of the U.S. Secret Service to submit a report to Congress regarding the failed assassination attempt of Donald J. Trump in Butler Pennsylvania, on July 13, 2024. The committee adopted Hawley amendment 2 by voice vote with Senators Peters, Hassan, Sinema, Rosen, Ossoff, Blumenthal, Butler, Paul, Lankford, Romney, Scott, Hawley, and Marshall present.

The bill, as amended by the Ossoff substitute amendment, Ossoff amendment 2, and Hawley amendment 2, was ordered reported favorably by a roll call vote of 13 yeas to 0 nays, with Senators Peters, Hassan, Sinema, Rosen, Ossoff, Blumenthal, Butler, Paul, Lankford, Romney, Scott, Hawley, and Marshall voting in the affirmative. Senators Carper and Johnson voted yea by proxy, for the record only.

#### IV. SECTION-BY-SECTION ANALYSIS OF THE BILL, AS REPORTED

##### *Section 1. Short titles*

This section establishes the short title of the bill as the "*Detection Equipment and Technology Evaluation to Counter the Threat of Fentanyl and Xylazine Act of 2024*" or the "*DETECT Fentanyl and Xylazine Act of 2024*."

##### *Section 2. Enhancing the capacity to detect and identify drugs such as fentanyl and xylazine*

This section amends Section 302 of the Homeland Security Act of 2002, which specifies the responsibilities and authorities of the Under Secretary for S&T. The section adds a paragraph directing the Secretary, through the Under Secretary for S&T, to carry out research, development, testing, evaluation, and cost-benefit analyses to improve the safety, effectiveness, and efficiency of equipment and the effectiveness and efficiency of reference libraries used for the accurate detection of drugs such as fentanyl and xylazine.

It specifies that these activities, should include development of portable equipment that can detect and identify drugs with minimal or no handling of the sample. It also specifies that these activities include development of equipment that can analyze complex mixtures, such as those with varying concentrations of active synthetic opioids and inactive cutting agents, to allow field detection and identify the specific drug(s) present in the sample collected. Additionally, it adds a requirement for S&T to work on technologies that use machine learning or artificial intelligence and other techniques to predict whether the substances in a sample are controlled substance analogues.

### *Section 3. Requirements*

This section specifies requirements for the implementation the requirements outlined in the previous section. Specifically, it requires the Under Secretary for S&T to follow the recommendations, guidelines, and best practices described in the Artificial Intelligence Risk Management Framework or any successor document published by the National Institute of Standards and Technology. It also requires the Under Secretary to establish S&T's priorities for research, development, testing, evaluation, and cost-benefit analysis activities based on the latest available information. This includes specific drugs identified as threats in the latest Homeland Threat Assessment published by DHS and the latest State and Territory Report on Enduring and Emerging Threats published by the Drug Enforcement Administration, or any successor documents.

### *Section 4. Report regarding failed assassination attempt on the life of Donald J. Trump*

This section requires the Director of the U.S. Secret Service to submit a report to appropriate congressional committees containing any information related to the failed assassination attempt on the life of Donald J. Trump on July 13, 2024.

### *Section 5. Rule of construction*

This section provides a rule of construction, stating that nothing in the Act may be construed to limit the authority of agencies currently managing, overseeing, or otherwise involved in drug equipment and reference libraries.

## V. EVALUATION OF REGULATORY IMPACT

Pursuant to the requirements of paragraph 11(b) of rule XXVI of the Standing Rules of the Senate, the Committee has considered the regulatory impact of this bill and determined that the bill will have no regulatory impact within the meaning of the rules. The Committee agrees with the Congressional Budget Office's statement that 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.

## VI. CONGRESSIONAL BUDGET OFFICE COST ESTIMATE

<b>S. 4419, DETECT Fentanyl and Xylazine Act of 2024</b>			
As ordered reported by the Senate Committee on Homeland Security and Governmental Affairs on September 18, 2024			
By Fiscal Year, Millions of Dollars	2024	2024-2029	2024-2034
Direct Spending (Outlays)	0	0	0
Revenues	0	0	0
Increase or Decrease (-) in the Deficit	0	0	0
Spending Subject to Appropriation (Outlays)	0	*	not estimated
Increases <i>net direct spending</i> in any of the four consecutive 10-year periods beginning in 2035?	No	Statutory pay-as-you-go procedures apply?	No
		<b>Mandate Effects</b>	
Increases <i>on-budget deficits</i> in any of the four consecutive 10-year periods beginning in 2035?	No	Contains intergovernmental mandate?	No
		Contains private-sector mandate?	No
* = between zero and \$500,000.			

S. 4419 would require the Department of Homeland Security (DHS) to engage in research and development of technologies and equipment that would help federal, state, local, tribal, and territorial law enforcement agencies detect illicit drug trafficking.

Under current law, DHS already conducts research on equipment and technologies to detect and intercept illegal drugs. On that basis, CBO estimates that implementing S. 4419 would cost less than \$500,000 over the 2024–2029 period. Any related spending would be subject to the availability of appropriated funds.

On July 18, 2024, CBO transmitted a cost estimate for H.R. 8663, the DETECT Fentanyl and Xylazine Act of 2024, as ordered reported by the House Committee on Homeland Security on June 12, 2024. The two pieces of legislation are similar, and CBO's estimates of their budgetary effects are the same.

The CBO staff contact for this estimate is Jeremy Crimm. The estimate was reviewed by H. Samuel Papenfuss, Deputy Director of Budget Analysis.

PHILLIP L. SWAGEL,  
*Director, Congressional Budget Office.*

## VII. CHANGES IN EXISTING LAW MADE BY THE BILL, AS REPORTED

In compliance with paragraph 12 of rule XXVI of the Standing Rules of the Senate, changes in existing law made by the bill, as reported, are shown as follows: (existing law proposed to be omitted is enclosed in brackets, new matter is printed in italic, and existing law in which no change is proposed is shown in roman):

**HOMELAND SECURITY ACT OF 2002**

\* \* \* \* \*

**TITLE III—SCIENCE AND TECHNOLOGY  
IN SUPPORT OF HOMELAND SECURITY**

\* \* \* \* \*

**SEC. 302. RESPONSIBILITIES AND AUTHORITIES OF THE UNDER SECRETARY FOR SCIENCE AND TECHNOLOGY.**

\* \* \* \* \*

(13) coordinating with other appropriate executive agencies in developing and carrying out the science and technology agenda of the Department to reduce duplication and identify unmet needs; **[and]**

(14) developing and overseeing the administration of guidelines for merit review of research and development projects throughout the Department, and for the dissemination of research conducted or sponsored by the Department~~...~~; *and*

(15) *carrying out research, development, testing, evaluation, and cost-benefit analyses to improve the safety, effectiveness, and efficiency of equipment and the effectiveness and efficiency of reference libraries for use by Federal, State, local, Tribal, and territorial law enforcement agencies for the accurate detection of drugs, such as fentanyl and xylazine, including—*

*(A) portable equipment that can detect and identify drugs with minimal or no handling of the sample;*

*(B) equipment that can separate complex mixtures containing low concentrations of drugs and high concentrations of cutting agents into their component parts to enable signature extraction for field identification and detection; and*

*(C) technologies that use machine learning or artificial intelligence (as defined in section 5002 of the National Artificial Intelligence Initiative Act of 2020 (15 U.S.C. 9401)) and other techniques to predict whether the substances in a sample are controlled substance analogues or other new psychoactive substances not yet included in available reference libraries.*

\* \* \* \* \*