

112TH CONGRESS  
2D SESSION

**S.** \_\_\_\_\_

To require the Under Secretary for Science and Technology in the Department of Homeland Security to contract with an independent laboratory to study the health effects of backscatter x-ray machines used at airline checkpoints operated by the Transportation Security Administration and provide improved notice to airline passengers.

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IN THE SENATE OF THE UNITED STATES

Ms. COLLINS (for herself, Mr. BROWN of Massachusetts, Mr. AKAKA, and Mr. COBURN) introduced the following bill; which was read twice and referred to the Committee on \_\_\_\_\_

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**A BILL**

To require the Under Secretary for Science and Technology in the Department of Homeland Security to contract with an independent laboratory to study the health effects of backscatter x-ray machines used at airline checkpoints operated by the Transportation Security Administration and provide improved notice to airline passengers.

1       *Be it enacted by the Senate and House of Representa-*  
2       *tives of the United States of America in Congress assembled,*

1 **SECTION 1. STUDY OF HEALTH EFFECTS OF BACKSCATTER**  
2 **X-RAY MACHINES.**

3 (a) IN GENERAL.—The Under Secretary for Science  
4 and Technology in the Department of Homeland Security  
5 shall provide for the conduct of an independent study of  
6 the effects on human health caused by the use of  
7 backscatter x-ray machines at airline checkpoints operated  
8 by the Transportation Security Administration.

9 (b) REQUIREMENTS FOR STUDY.—

10 (1) CONDUCT.—The study required under sub-  
11 section (a) shall be—

12 (A) initiated not later than 90 days after  
13 the date of the enactment of this Act;

14 (B) conducted by an independent labora-  
15 tory selected by the Under Secretary, in con-  
16 sultation with the National Science Foundation,  
17 from among laboratories with expertise in the  
18 conduct of similar studies; and

19 (C) to the maximum extent practicable,  
20 consistent with standard evaluations of radio-  
21 logical medical equipment.

22 (2) TESTING EQUIPMENT.—In conducting the  
23 study, the laboratory shall, to the maximum extent  
24 practicable—

1 (A) use calibration testing equipment de-  
2 veloped by the laboratory for purposes of study;  
3 and

4 (B) use commercially-available calibration  
5 testing equipment as a control.

6 (3) ELEMENTS.—In conducting the study, the  
7 laboratory shall, to the maximum extent practicable  
8 and consistent with recognized protocols for inde-  
9 pendent scientific testing—

10 (A) dismantle and evaluate one or more  
11 backscatter x-ray machine used at airline check-  
12 points operated by the Transportation Security  
13 Administration in order to determine—

14 (i) the placement of testing equipment  
15 so that radiation emission readings during  
16 the testing of such machines are as accu-  
17 rate as possible; and

18 (ii) how best to measure the dose  
19 emitted per scan;

20 (B) determine the failure rates and effects  
21 of use of such machines;

22 (C) include the use of alternative testing  
23 methods in the determination of levels of radi-  
24 ation exposure (such as an examination of en-  
25 zyme levels after x-ray exposure to determine if

1           there is a biological response to cellular damage  
2           caused by such an exposure);

3           (D) assess the fail-safe mechanisms of  
4           such machines in order to determine the opti-  
5           mal operating efficacy of such machines;

6           (E) ensure that any tests performed are  
7           replicable;

8           (F) obtain peer review of any tests per-  
9           formed; and

10          (G) meet such other requirements as the  
11          Under Secretary shall specify for purposes of  
12          the study.

13          (4) REPORT.—

14           (A) EVALUATION.—The Under Secretary  
15           shall provide for an independent panel, in con-  
16           sultation with the National Science Foundation,  
17           with expertise in conducting similar evaluations,  
18           to evaluate the data collected under the study  
19           to assess the health risks posed by backscatter  
20           x-ray machines to individuals and groups of  
21           people screened or affected by such machines,  
22           including—

23                   (i) frequent air travelers;

24                   (ii) employees of the Transportation  
25                   Security Administration;

1 (iii) flight crews;

2 (iv) other individuals who work at an  
3 airport; and

4 (v) individuals with greater sensitivity  
5 to radiation, such as children, pregnant  
6 women, the elderly, and cancer patients.

7 (B) CONSIDERATIONS.—In conducting the  
8 evaluation under subparagraph (A), the panel  
9 shall—

10 (i) conduct a literature review of rel-  
11 evant clinical and academic literature; and

12 (ii) consider the risk of backscatter x-  
13 ray technology from a public health per-  
14 spective in addition to the individual risk  
15 to each airline passenger.

16 (C) REPORTS.—

17 (i) PROGRESS REPORTS.—Not later  
18 than 90 days after the date of the enact-  
19 ment of this Act, and periodically there-  
20 after until the final report is submitted  
21 pursuant to clause (ii), the Under Sec-  
22 retary shall submit a report to Congress  
23 that contains the preliminary findings of  
24 the study conducted under this subsection.

1                   (ii) FINAL REPORT.—Not later than  
2                   90 days after the date on which the panel  
3                   completes the evaluation required under  
4                   this paragraph, the Under Secretary shall  
5                   submit a report to Congress that contains  
6                   the result of the study and evaluation con-  
7                   ducted under this subsection.

8 **SEC. 2. SIGNAGE REQUIREMENT RELATING TO**  
9                   **BACKSCATTER X-RAY MACHINES.**

10           The Administrator of the Transportation Security  
11 Administration shall ensure that large, easily readable  
12 signs or equivalent electronic displays are placed at the  
13 front of airline passenger check point queues where  
14 backscatter advanced imaging technology machines are  
15 used for screening to inform airline passengers, particu-  
16 larly passengers who may be sensitive to radiation expo-  
17 sure, that they may request to undergo alternative screen-  
18 ing procedures instead of passing through a backscatter  
19 x-ray machine.