14 April 2006

Rules Docket Clerk
Office of the General Counsel
Federal Emergency Management Agency
Room 840
500 C Street SW
Washington, DC 20472

Re: Preparedness Directorate/Department of Homeland Security
Docket # DHS-2004-0029 and Z-RIN 1660-ZA02

To Whom It May Concern:

We hereby submit comments on the controversial Department of Homeland Security (DHS) guidance for response to radiological dispersal devices (RDDs or "dirty bombs").

On 3 January 2006, DHS published in the Federal Register a request for public comment on the dirty bomb guidance. However, at the same time, DHS made the guidance immediately effective. Providing an after-the-fact opportunity for public input diminishes public confidence in the process, ironic in light of the guidance's discussion of steps necessary to involve stakeholders.

The DHS decision to issue the guidance in immediately effective form, prior to opportunity for formal public comment, was not due to time constraints. The text now published is largely identical to the draft that has been in existence since June of 2004.

Furthermore, that 2004 draft, obtained by the trade press, resulted in a storm of public concern. A detailed critique was submitted by 57 organizations on 2 December 2004, followed by a similar letter from 46 additional organizations on 27 January 2005, identifying serious failings in the 2004 draft guidance. All of these concerns have been ignored in issuance of the final guidance, with no substantive response let alone any changes made regarding any of the specific problems identified.

Rather than repeating in detail the concerns specified in the December 2004 and January 2005 group letters, we attach them here as Exhibits 1 and 2 respectively and incorporate them by reference. We do summarize the matters here, and update them based on new developments that have transpired since.

The guidance document proposes long-term cleanup criteria be based on proposals such as those of the International Commission on Radiation Protection (ICRP) that would allow the public to be exposed to doses approaching 10,000 millirem per year over many decades – the equivalent of 50,000 chest X-rays over the assumed exposure period – without any cleanup to reduce risk to public health. Such a dose, according to the federal government's official radiation risk estimates at the time the guidance was drafted (e.g., Federal Guidance Report 13), would result in a quarter of the people exposed getting cancer from that radiation exposure (i.e.,

in excess of the number of people who would have gotten cancer in the absence of that radiation). This is wholly unacceptable.

In the December 2004 letter, a chart was included as Attachment A showing the official risk estimates for the doses proposed in the guidance as "acceptable." When taking into account the early, intermediate, and late phase proposals, the guidance would allow exposures to the public that would produce a risk of 1 in 4 to 1 in 80 chance of cancer, depending on which long-term dose limit contemplated in the guidance is in fact utilized. Again, such public risks from exposures exceed by orders of magnitude anything historically considered acceptable by EPA, whose normal acceptable risk range is from 1 in a million to 1 in 10,000 chance of cancer.

Since the 2004 draft of the guidance and the public letters of concern in late 2004 and 2005, there has been an important new development. The National Academy of Sciences (NAS) has recently issued its long-awaited BEIR VII report (Biological Effects of Ionizing Radiation). The BEIR reports are used by federal agencies to estimate risks and establish regulations and guidance on radiation exposures.

The BEIR VII report expressly rejects the claims by some nuclear proponents that there might be a threshold below which radiation exposure was not harmful and affirms that risk is linear with dose. Furthermore, BEIR VII estimates excess cancer incidence from "low level" radiation exposure to be about 35% greater than the figures used by federal agencies (e.g., Federal Guidance Report 13) based on the earlier BEIR V. In other words, the risks from the huge doses contemplated as acceptable in the DHS guidance are even higher than estimated in the group letters of late 2004/early 2005.

Additionally, the largest study of nuclear workers ever conducted, based on 400,000 workers from 154 nuclear facilities in 15 nations, has recently been published; Cardis et al. "Risk of cancer risk after low doses of ionising radiation: retrospective cohort study in 15 countries." *British Medical Journal* (2005) 331:77. The study, conducted by a large international team convened by the International Agency for Research on Cancer, finds cancer mortality risks per unit of "low dose radiation" to be approximately six times higher than the estimate currently used by regulatory agencies to set acceptable doses. The results of the 15-nation study are similar to a series of other occupational studies, including several from the Department of Energy's Santa Susana Field Laboratory, Oak Ridge, and Hanford nuclear facilities, all suggesting current agency risk estimates may be low by as much as an order of magnitude. The 15-nation study came out too late to be considered by the NAS in making the risk estimates in the body of its report.

Although we believe the NAS BEIR VII estimates may thus be low, we have revised the table from the 2004 letter to reflect the BEIR VII new risk figures. It is included here as Appendix I. It demonstrates that the doses to the public proposed to be "acceptable" in the DHS guidance would result in between *a third of the people exposed getting a cancer from the excess radiation to one in sixty*, depending on which long-term "benchmark" was utilized in the "optimization" process suggested by DHS. In other words, DHS suggests letting the public go back into contaminated areas, without steps to clean them up, at radiation doses high enough to result in up to a third of those exposed getting cancer from the additional radiation. This is based

on the National Academy of Sciences' estimates of radiation risk, not ours. A discussion of the official federal government cancer risk figures, used in the original table for the 2004 group, and the National Academy of Sciences updated estimates, used in our revised table here, is included in Appendix II hereto.

We find doses and risks this high to be grossly nonprotective and urge DHS to promptly abandon all such suggestions that these doses could be allowed. Instead, the guidance for long-term cleanup should be revised to require use of EPA's Superfund cleanup criteria. In other words, cleanup from a dirty bomb should be no less protective than the levels we use in cleaning up the nation's most contaminated sites.

In addition to the massive doses contemplated in the guidance for long term reoccupation of an area without any cleanup, we are troubled by the proposals for high doses in the intermediate phase – i.e., presuming people would have to drink contaminated water and that contaminated agricultural products would continue to be sold rather than interdicted. EPA routinely requires at contaminated sites the provision of alternative drinking water supplies during emergency responses; there is no reason that shouldn't be done here. People shouldn't be forced to drink contaminated water. Additionally, Chernobyl makes clear the importance of interdicting contaminated foodstuffs. There is no reason that the guidance should presume or allow seriously contaminated food grown in contaminated soil to be used or sold for consumption, thereby spreading the adverse impacts of a terrorist attack far and wide.

The NRC, in an early submission to the DHS taskforce, suggested applying these grossly lax cleanup standards eventually to regularly contaminated nuclear sites. We strongly opposed any such suggestion. Additionally, the DHS guidance suggests that radioactively contaminated materials from the site of a dirty bomb attack could be freely released as part of any cleanup – i.e., not disposed of in a licensed radioactive waste disposal facility. We oppose such suggestions as well.

In conclusion, the DHS guidance is seriously deficient and would permit exposures of the public, without protective actions by government, that are so high as to result in grossly unacceptable harm to the public. A terrorist attack would be bad enough; a prior governmental decision to not clean the contamination up and allow the public to be exposed to very high radiation levels would only compound the harm done and multiply the terrorists' power. Government should be attempting the opposite instead – minimization of harm and of the destructive capability of terrorists.

FEMA was widely criticized for failing to act protectively in the wake of Katrina. We believe the DHS/FEMA guidance for dealing with a dirty bomb active would be a radioactive Katrina in the making. We urge a different course.

Sincerely,

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APPENDIX I

REVISED CANCER RISKS FROM DEPARTMENT OF HOMELAND SECURITY DIRTY BOMB CLEANUP GUIDANCE BASED ON LATEST NATIONAL ACADEMY OF SCIENCES RADIATION RISK FIGURES

APPENDIX I

REVISED CANCER RISKS FROM
DEPARTMENT OF HOMELAND SECURITY DIRTY BOMB CLEANUP GUIDANCE
BASED ON LATEST NATIONAL ACADEMY OF SCIENCES RADIATION RISK FIGURES*

Table 1 Long-Term Cleanup Phase

Proposed Cleanup Benchmark[1]	= # of Chest X-rays Per Year[2] [Over 30 Years]	Risk of Cancer[3] (exponential)	=1 Cancer Per X People Exposed	Factor by Which EPA Acceptable Risk Range[4] Is Exceeded
100 mrem/year[5]	17 [500]	3.4×10^{-3}	300	34-3,400
500 mrem/year[6]	83 [2,500]	1.7×10^{-2}	60	170-17,000
1,000 mrem/year[7]	170 [5,000]	3.4×10^{-2}	30	340-34,000
2,000 mrem/year[8]	340 [10,000]	7×10^{-2}	15	700-70,000
10,000 mrem/year[9]	1,700 [50,000]	3.4×10^{-1}	3	3,400-340,000

Table 2 Early Phase

Proposed Protective Action Level	= # of Chest X-rays Per Year	Risk of Cancer (exponential)	=1 Cancer Per X People Exposed	Factor by Which EPA Acceptable Risk Range Is Exceeded
1,000 mrem[10]	170	1.14×10^{-3}	880	11-1100
5,000 mrem/year[11]	830	5.7×10^{-3}	175	57-57,000

***** The 2004 table was based on cancer risk estimates from Federal Guidance Report 13 (FGR 13). Since that time, the National Academy of Sciences has issued *Health Risks from Exposure to Low Levels of Ionizing Radiation*, the so-called BEIR VII Report, which updates cancer risk estimates from radiation based on review of the latest research, increasing cancer risk figures by approximately a third over the FGR 13 levels. The NAS BEIR reports are relied upon by all U.S. agencies for establishing radiation risks. The BEIR VII work was performed by the NAS at the request and with the funding of NRC, DOE, and EPA. We have therefore updated our table based on the latest NAS radiation risk figures.

Table 3 Intermediate Phase

Proposed Levels 1st Year	Proposed Levels subsequent years[12]	# of Chest X-rays Per Year *[Over 3 Years[13]]*	Risk of Cancer (exponential)[14]	=1 Cancer Per X People Exposed	Factor by Which EPA Acceptable Risk Range Is Exceeded[15]
2,000 mrem 1st year		333	2.3×10^{-3}	430	23-2,300
	500 mrem/year– general exposure	83 *[250]*	1.7×10^{-3}	580	17-1,700
	+500 mrem/year – food interdiction	83 *[250]*	1.7×10^{-3}	580	17-1,700
	500 mrem/year drinking water interdiction	83 *[250]*	1.7×10^{-3}	580	17-1,700
	Total 1,500 mrem/yr	250 *[750]*	5.1×10^{-3}	190	51-5,100

Table 4 Total Dose to Public from DHS Proposed Radiation Guidelines

Phase	Proposed Dose Level	= # of Chest X-rays	Risk of Cancer (exponential)	=1 Cancer Per X People Exposed	# of cancers produced if the exposed population is 10,000 people[16]	Factor by Which EPA Acceptable Risk Range Is Exceeded
Early	5,000 mrem	833	5.7×10^{-3}	175	57	
Intermediate – 1st yr	2,000 mrem 1st year	333	2.3×10^{-3}	440	23	
Yrs 2-4 (total)	4,500 mrem	750	5.1×10^{-3}	190	51	
Late Phase[17]	3,000-300,000 mrem[18]	500-50,000	3.4×10^{-3} – 3.4×10^{-1}	290-3	25-2,500	
Total[19]	**14,500 – 311,500 mrem**	**2,400 – 52,000**	**1.7×10^{-2} – 3.5×10^{-1}**	**60-3**	**170 – 3,500**	**170-17,000 - 3,500-350,000**

Endnotes

[1] The current draft Department of Homeland Security cleanup guidance, as released by the trade press, has no specific cleanup standards for the late phase cleanup, implicitly turning away from existing cleanup standards such as EPA's CERCLA requirements, and instead referring to unspecified 'benchmark" values proposed by nuclear advisory groups, and federal and state government agencies. We have therefore focused on such proposals, as from HPS and ICRP, and the DOE and NRC proposals made in an earlier draft of the DHS guidance, recognizing that there are far more protective standards in existence, such as EPA's historical cleanup standards, that could be – and should have been – adopted in the DHS guidance as the preferred benchmark.

[2] Standard chest X-ray ≈ 6 mrem. (General Accountability Office Report GAO/RCED-00-152, "Radiation Standards," fn. 3, page 7.) Doses vary by machine.

[3] Our original 2004 table was based on the then-official figure for cancer incidence risk of 8.46 $x10^{-4}$/person-rem, as set forth in Federal Guidance Report 13 (FGR 13). (Put more simply, 8-9 people are expected to come down with cancer from their radiation exposure if 10,000 people each receive 1 rem, or if 1000 people each receive 10 rem). Federal Guidance Report No. 13, *Cancer Risk Coefficients for Environmental Exposure to Radionuclides*, EPA 402-R-99-001, US EPA Office of Radiation and Indoor Air, funded by EPA, NRC, and DOE, September 1999, pp. 179, 182; http://www.epa.gov/radiation/docs/federal/402-r-99-00.pdf. FGR 13 provides estimates of fatal cancer risk of 5.75 x 10^{-4} per person-rem [5.75 x 10^{-2} per person-gray] and total cancer incidence or morbidity (fatal and nonfatal combined) of 8.46 x 10^{-4} per rem [8.46 x 10^{-2} per person-gray].

Awaiting the newest National Academy of Sciences Report on Biological Effects of Ionizing Radiation (BEIR VII), all federal agencies have used approximately the same mortality risk factors, i.e. the Federal Guidance Report 13 figures cited above. See, e.g., *NRC Policy Statement on Below Regulatory Concern*, 3 July 1990, p. 8, and *NRC 10 CFR Part 20, et al. Radiological Criteria for License Termination; Final Rule*, July 21, 1997, Vol. 62 Federal Register 39058, 39061, noting its reliance on and the similarity of the Federal Guidance 13 and ICRP Publication 60 risk figures; and DOE *Environmental Assessment for the Energy Technology and Engineering Center*, DOE/EA-1345, p. C-3, March 2003. The minor differences between agencies – DOE and NRC at times use mortality figures of 5 x 10^{-4} / person-rem instead of the Federal Guidance Report 13 figure of 5.75 x 10^{-4}, particularly in pre-FGR 13 documents -- are inconsequential for the discussion here because of the high magnitude of the risk of the dose limits represented.

The old agency risk estimates from radiation described above were in turn derived in large part from *Health Effects of Exposure to Low Levels of Ionizing Radiation*, the report by the National Academy of Sciences' Committee on the Biological Effects of Ionizing Radiation (BEIR V), 1990, which sets the risk of fatal cancer at 8 x 10^{-4} per person-rem. (See NAS BEIR V Report p. 6

and 172-3,5). EPA and other agencies rely upon the NAS numbers, but reduce the risk factor by a Dose and Dose Rate Effectiveness Factor (DDREF). No agency – nor the NAS – accepts the controversial argument put forward by some in the nuclear industry that there is a threshold below which radiation is completely safe, or may even be beneficial ("hormesis"), but all agencies depart from the linear model at low doses by reducing risks at low doses and dose rates by a DDREF of approximately 2, beyond the reduction from just linear scaling from higher doses.

When conducting site-specific risk assessments at Superfund sites, EPA uses isotopic-specific risk coefficients rather than rely on the more generic rem-to-cancer risk estimates cited here. However, this type of more accurate risk assessment is not possible prior to a radiological attack.

The assumed exposure period is 30 years, the presumption generally used by EPA's Superfund program for estimating exposure at Superfund sites (although EPA has in other instances assumed a full lifetime of exposure of 70 years.) For simplicity, we have used the official government risk figures for cancer induction from radiation exposure and the less conservative 30-year rather than lifetime exposure assumption. True risks therefore may be higher than presented here, as people may live or work at the same location longer than 30 years, and several studies (e.g., of DOE radiation workers at Oak Ridge, Hanford, and Santa Susana) suggest ten-fold higher cancer risks than assumed in Federal Guidance 13.

If the half-life of the radioniuclide(s) involved were short, there may be a reduction of dose over the 30 year exposure period and therefore a reduction in risk from the figures cited above. If, however, the radionuclide(s) half-life were long, there may be no significant dose reduction in that period. Additionally, effects of weathering would need to be taken into account, but that would involve site-specific considerations.

Since our original table was prepared, but prior to the release by DHS of the dirty bomb cleanup guidance in interim effective form for comment, the National Academy of Sciences has released the latest, updated BEIR Report (BEIR VII). It increases the risk estimates for cancer incidence by approximately a third over the FGR 13 figures cited above. The new risk figure, based on review of the latest research, is 1.14×10^{-3} cancers per person-rem of exposure to a population of standard age and gender distribution. (See e.g., Table 12-9, summing for leukemia and all solid cancers and averaging across gender.) We have revised our table here to reflect the latest National Academy of Sciences risk estimates.

[4] EPA has long set the acceptable risk range for cancer induction from exposure to contaminants (chemicals and radionuclides combined) as $10^{-4} – 10^{-6}$, or one cancer per 10,000 to 1,000,000 people exposed, with the starting point for acceptable risk being one in a million, falling back to no more than one in ten thousand if there are good reasons why the one in a million level cannot be obtained.

See, e.g., CERCLA statute and EPA's implementing guidance. As EPA acknowledged in an earlier draft of the DHS guidance, there may be extraordinary circumstances regarding a dirty bomb requiring, in a particular case, going outside the normal risk range, but the basic cleanup standards should be based on the existing EPA CERCLA risk range.

[5] HPS suggested lower range [*Guidance for Protective Actions Following a Radiological Terrorist Event - Position Statement of the Health Physics Society*, January 2004. Ramona Trovato, in the EPA statement quoted in our letter, says NRC estimates the cancer risk of a 100 mrem/year cleanup standard as 1 in 200 (5×10^{-3}). We give it here as 3.4×10^{-3}. NRC presumably used a longer exposure time (e.g., lifetime) than the 30 years we assumed. Our risk figures here thus might be low (i.e., underestimate true risk) on that basis alone.

[6] HPS suggested upper range; DOE & NRC suggested benchmark [*Risk Management Framework for Radiological Dispersal Device (RDD)/ Improvised Nuclear Device (IND) Incidents (Guidance for Development of Countermeasures),* Rough Draft July 18, 2003, pp. 25, made by public by the trade publication *Inside EPA*

[7] ICRP suggested lower range [*Protecting People Against Radiation Exposure in the Aftermath of a Radiological Attack-- A Report from a Task Group of the ICRP*, Final TG Draft April 2004, p. 79

[8] DOE suggested upper range for long-term cleanup standard, DHS Rough Draft July 18, 2003, p. 28. The 2,000 mrem/year proposed limit includes background, which averages in the U.S. ~330 mrem/year, most of it from indoor radon. The 2,000 mrem/year limit with background thus would average ~1,670 mrem/year above background. The contradiction between this value and the 500 mrem/year above background recommendation in the same paragraph is not explained in the DOE appendix to the DHS draft. The X-ray equivalence and risk figures in the succeeding columns for that row are based on the 2,000 mrem/yr figure (i.e., including background). Since all other of the proposed cleanup levels do not include background, to make them comparable, one would reduce the X-ray and risk figures for this one proposed standard by 330/2,000 = 16.5% to get the contribution from the radiation from the dirty bomb alone.

[9] ICRP suggested upper range

[10] Lower range of recommended protective actions of sheltering and/or evacuation of public

[11] Upper range of recommended protective actions of sheltering and/or evacuation of public

[12] These permitted doses are additive – i.e., one is permitted 500 mrem/year from general contamination such as soil contamination, 500 mrem/year from contaminated food, and 500 mrem/year from contaminated drinking water, for a total of 1,500 mrem/year each year of the intermediate phase after the first year.

[13] These limits are for subsequent years prior to the late phase cleanup. We here assume this takes three years, but it could be longer and the doses thus higher.

[14] For 1st year, risk for dose in that year. For subsequent years, risk for the 3 years following.

[15] The World Trade Center benchmark of aggressive cleanup of chemical toxic materials in apartments–comparable to the intermediate phase here – was accomplished with a 1×10^{-4} lifetime cancer risk cleanup benchmark assuming one year of exposure. These proposed radiation cleanup standards for the intermediate phase would be many times more lax than EPA permitted for the World Trade Center cleanup—a total risk of 7.4×10^{-3}, or 74 times the risk standard used by EPA for the World Trade Center cleanup. See *World Trade Center Indoor Air Assessment: Selecting Contaminants of Potential Concern and Setting Health-Based Benchmarks*, Prepared by the Contaminants of Potential Concern (COPC) Committee of the World Trade Center Indoor Air Taskforce Working Group, Peer Review Draft, September, 2002, pp. 11-12. The overall 30-year long-term cleanup benchmark used by EPA for cleanup of the surrounding area after the World Trade Center attack was also 1×10^{-4}. See *World Trade Center Indoor Environment Assessment: Selecting Contaminants of Potential Concern and Setting Health-Based Benchmarks* May 2003 Prepared by the Contaminants of Potential Concern (COPC) Committee of the World Trade Center Indoor Air Task Force Working Group, p. 58.

[16] Assume, for example, a dirty bomb going off in a crowded downtown metropolitan area where 10,000 people live and/or work in the affected zone. The number could be significantly larger under some radiological weapon scenarios in highly populated areas.

[17] Uses EPA common assumption of 30-year total exposure after cleanup is completed.

[18] Lower figure is based on 100 mrem/year benchmark, upper figure based on 10,000 mrem/year benchmark

[19] Similarly, the range for total exposure--taking into account immediate, intermediate, and late phase cleanup--is bracketed by the totals including the lower long-term cleanup benchmark on the one hand and the upper long-term cleanup benchmark on the other.

APPENDIX II

BACKGROUND ON MATTERS RAISED IN 14 APRIL 2006 COMMENT LETTER TO DHS ON DIRTY BOMB GUIDANCE

APPENDIX II

BACKGROUND ON MATTERS RAISED IN 14 APRIL 2006 COMMENT LETTER TO DHS ON DIRTY BOMB GUIDANCE

Supporting background information is provided here regarding issues raised in the group letter to DHS commenting on the dirty bomb guidance.

1. The Government's Own Official Radiation Risk Figures Show That the Doses Contemplated by the DHS Dirty Bomb Cleanup Guidance Would Result in As High As a Quarter of the People Exposed Getting Cancer from the Radiation Exposure

Nowhere in the DHS dirty bomb response guidance is there an explanation of the excess cancer risk associated with the radiation doses the guidance would allow. There is a single paragraph in the text (at 71 FR 187) which that briefly discusses the cancer risk to a worker receiving 10 or 25 rem, but nowhere in the guidance is there any explication of the cancer risk to the public receiving the doses the guidance contemplates under its "optimization" process relying on "benchmarks."[1]

In Attachment A to the group letters of 2 December 2004 (enclosed here in its entirety as Exhibit 1), tables are produced that does what the DHS guidance failed to do—disclose the cancer risks from the proposed "acceptable" doses. The tables calculate cancer risk for each of the primary "benchmarks" contemplated by DHS in this guidance, as well as translating the proposed doses into more understandable terms (equivalent number of chest X-rays). To be "conservative" in terms of presentation, although non-conservative in terms of public health, the tables rely entirely on the federal government's own assumptions about exposure and risk. It is assumes that no individual resides in his or her neighborhood or works in the same area for more than thirty years, although many people obviously do. Furthermore, the conversion of dose to cancer risk is based entirely on the federal government's own official guidance – as embodied in

[1] Furthermore, the guidance makes numerous mistakes in that paragraph. For example, it says Federal Guidance Report 13 sets the cancer mortality risk at about 6×10^{-4} per rem (6 cancer deaths per 10,000 person-rem) and 7×10^{-4} for cancer incidence. But FGR 13 sets cancer incidence at 8.46×10^{-4} cancers per rem. See FGR 13 at p. 182) [Having cancer incidence rates per rem almost the same as cancer mortality rates of course makes no sense, as it would imply virtually all cancers are fatal and treatment the vast majority of the time ineffective. Indeed, the FGR 13 cancer incidence figure turns out to be low, as the new BEIR VII report estimates it at 1.14×10^{-3} per rem, as will be discussed in the body of this appendix.] Additionally, the guidance asserts that the cancer mortality risk to workers receiving 25 rem is 15 deaths per thousand people exposed, but that the risk to younger workers is higher and to older workers lower, claiming the former risk is 9.1 deaths per thousand and the latter 5.3. These assertions are contradictory, as the guidance asserts the risks to both younger and older workers are *markedly lower* than the risks to workers as a whole (i.e. 9.1 and 5.3 are both lower than the average risk of 15 deaths per 1000). Furthermore, the guidance cites FGR 13 for its claim of these figures for younger and older workers; but it appears those figures in fact come from EPA's 1991 *Manual of Protective Action Guides and Protective Actions for Nuclear Incidents,* which in turn was based on BEIR III – two generations outdated compared to the most current BEIR report, BEIR VII.

Federal Guidance Report 13 (FGR 13) – despite significant evidence that those risk figures significantly understate risk.

Federal Guidance Report 13, *Cancer Risk Coefficients for Environmental Exposure to Radionuclides*, was funded by Environmental Protection Agency (EPA), Department of Energy (DOE) and the Nuclear Regulatory Commission (NRC) and issued in 1999. It, in turn, relies upon the National Academy of Sciences' BEIR V Report (Biological Effects of Ionizing Radiation), which, as will be discussed below, has since been superseded by BEIR VII, which significantly increases the cancer incidence risk estimates over those used in FGR 13. All federal agencies use cancer risk estimates for radiation exposure similar to FGR 13. The estimates of risk put forward in the 2 December 2004 group letter to DHS thus rely *on the government's own official radiation risk estimates.*

The key number from FGR 13 is the estimate of 5.75×10^{-4} fatal cancers per rem and 8.46×10^{-4} cancers (fatal and non-fatal) per rem. See FGR 13 pp. 179, 182.[2] Therefore, the risk to the public of the "benchmark" proposed by ICRP and referenced in the Federal Register notice can readily be calculated, for example. That benchmark is 10 rem/year exposure before long-term cleanup must be performed.[3] [The NRC itself proposed cleanups not be required below 10 rem per year, relying on ICRP proposals, and urged such lax standards be applied also to cleanups for all types of radiological events, including commercial reactors.[4]] 10 rem per year over 30 years is the equivalent of approximately 50,000 chest X-rays and is a massive dose. The risk can be readily calculated as follows:

$$10 \text{ rem/ year} \times 30 \text{ years} \times 8.46 \times 10^{-4} \text{ cancers/rem} = 2.5 \times 10^{-1} \text{cancers}$$

or 2.5 cancers per 10 people exposed (1 cancer per 4 people exposed)

The other "benchmarks" contemplated (2 rem/year, 1 rem/year, 500 and 100 millirem/year) can be similarly converted into cancer risk, resulting in risks of 1 in 20, 1 in 40, 1 in 80, and 1 in 400 respectively. See Table 1 in Attachment 1 of the 2 December 2004 letter. These risks exceed by orders of magnitude the acceptable risk range long set by EPA.

However, the risks associated with the long-term cleanup standard are not the end of the story. The DHS guidance proposes very high doses to the public in the immediate and intermediate phases as well, without intervention to reduce the doses. When the full set of

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[2] FGR 13 gives the values in International Units, converted here into rems.

[3] International Commission on Radiation Protection Report Number 96, *Protecting People Against Radiation Exposure in the Event of a Radiological Attack*, October 2004, p. 70. ICRP 96 proposes that cleanup is virtually never merited below doses of 1 rem/year and is only mandatory above 10 rem/year, with the range 1-10 rem/year such that officials can choose to do no cleanup or to take action, as they see fit. Again, international units have been translated into rems here.

[4] *OHS RDD/IND Subgroup for Consequence Management/Site Restoration, Clean-up and Decontamination White Paper on Recovery, Decontamination, and Cleanup Levels including Acceptable risk Assessment and Technology (CMS005),* 3-1-03, p. 3, "NRC Recommendations".

standards is taken into account—and thus the total dose to the public—the cancer risk ranges from 1 cancer per 4 people exposed to 1 in 80. It is hard to conceive that the public would find "acceptable" such doses –nor that decisionmakers who are to rely on the DHS guidance would do so were DHS to have disclosed the magnitude of these proposed doses and the associated cancer risks. *It should be noted once again that these estimates of cancer come entirely from using the federal government's own official risk estimates.*

2. The Recent National Academy of Sciences' Biological Effects of Ionizing Radiation Report Increases Risk Estimates; the DHS Guidance is Therefore Even More Dangerous Than Previously Assumed.

Federal radiation risk estimates and radiation protection regulations are based largely on reports by the National Academy of Sciences (NAS) called the BEIR Reports, for Biological Effects of Ionizing Radiation. Studies of the effects of penetrating radiation are conducted by NAS for the federal government every ten or fifteen years, reviewing the scientific literature that has accumulated since the last BEIR report. As indicated above, FGR 13 and other governmental risk estimates currently in use are based on the 1990 BEIR V report. EPA, NRC, and DOE requested and sponsored the BEIR VII study, which was released on 29 June 2005. Entitled *Health Risks from Exposure to Low Levels of Ionizing Radiation*, the study rejected claims that there might be a threshold below which radiation exposures weren't dangerous. It found all levels of radiation increased cancer risk, and that the risk increased linearly with dose.

Importantly, BEIR VII's estimate for cancer incidence from radiation is about 35% higher than the estimates federal agencies have up until now been using. BEIR VII estimates the risks for cancer incidence for men and women, for a population of 100,000 people of all ages exposed to 0.1 Gray (~10 rem)[5]:

	Males	Females	Average for Both Sexes
leukemia	100	72	86
all solid cancer	800	1310	1055
all cancers	900	1382	**1141**

Thus the BEIR VII cancer incidence risk estimate is 1141 cancers per million person-rem, or **1.14×10^{-3} per rem**. Put differently, the risk is 1.14 cancers per thousand person-rem.

With the new BEIR VII cancer incidence risk figures, one can calculate the risks from the DHS proposed doses using the most up-to-date NAS estimates. Those figures are found in Appendix I to this letter. The result: *the doses to the public proposed as acceptable by DHS would cause an excess cancer in between a third of all people exposed to one in sixty, depending*

[5] see Tables ES-1 and 12-9. BEIR VII gives the figures for males and females for leukemia and all solid cancer; we have summed the cancer types and included the average for both sexes.

upon which long-term cleanup "benchmark" is employed.[6] Again, these risk estimates derive not from our estimates of cancer risks, but from the National Academy of Sciences' most current study, a study sponsored by DOE, NRC, and EPA and which will be used to updated all agency risk figures.

It must be noted that much of the DHS guidance is based on Protective Action Guides (PAGs) established at least fifteen years ago and relying on BEIR III, which is in itself now a quarter of a century outdated and which has been superseded by two subsequent BEIR reports that have markedly increased radiation risk estimates. Reliance on permissible doses that are now known to produce risks far higher than presumed when initially adopted is troubling.

3. Other Studies Suggest the Risks Could Be Even Higher than Either FGR13 or BEIR VII Estimates

Too late to be considered by the NAS BEIR VII panel in establishing its estimates, a massive 15-nation study of nuclear workers has been recently published. The largest study ever of workers in the nuclear industry, it collected information on nearly 600,000 workers. The international collaboration was chaired by the International Agency for Cancer Research (IARC). The lead author, Elizabeth Cardis, was a member of the NAS BEIR panel. The BEIR VII report included a brief appendix indicating that the study results were not available in time to be included in the cancer risk estimates in the body of the report, but that the Cardis et al. study found higher risks than the BEIR report itself, which was based largely on A-bomb survivor data.

The study, *Risk of Cancer After Low Doses of Ionising Radiation: Retrospective Cohort Study in 15 Countries,* was published in the British Medical Journal 29 June 2005, the same day the BEIR report was released. It found cancer mortality associated with radiation exposure about **six times** higher than BEIR VII presumes. In this regard, it reinforces a string of studies that have reached similar conclusions – studies, for example, of DOE workers at Santa Susana, Oak Ridge, and Hanford, and Canadian workers, showing excess cancer from radiation about an order of magnitude higher than the BEIRVII/FGR13 estimates.[7]

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[6] The risk is not driven entirely by the long-term cleanup standard, as DHS is proposing very high doses to the public in the immediate and intermediate phases as well, which must be summed with the doses in the long-term phase to determine overall risk.

[7] It has long been postulated – most effectively by the late Dr. Alice Stewart – that exclusive reliance on the A-bomb survivor data may artificially skew downward radiation risk estimates, in part because of the "healthy survivor" effect. The A-bomb survivor cohort is not a representative population, as it represents the only group ever to experience nuclear weapons attacks. Those who died in the immediate aftermath from the blast, thermal, and other prompt effects of the weapon may well have been different to some degree than those who survived. The survivors may preferentially have been stronger – stronger immune systems, stronger ability to resist challenges to health. So the latent cancer effects in the Hiroshima and Nagaski populations might well have been higher had the weaker members of the cohort not died from the initial effects of the explosions.

Thus, the true risks associated with the radiation doses proposed as acceptable in the DHS guidance may be even higher than estimated based on FGR 13 and BEIR VII.

4. Cancer Risks from Dirty Bomb Radiation Would Be <u>In Addition</u> to Existing Cancer Risks, Including from Background. ***Background Radiation Is Harmful, In Itself Causing Cancer in Approximately One Out of Every Thirty-Five People.***

Some who wish to trivialize the cancer risks estimated by either the official agency pre-BEIR VII figures or from BEIR VII point out that approximately of the population already will contract cancer, implying that the estimate of 25% of those exposed to 10 rem/year over thirty years is less than the number getting cancer anyway and therefore no increase. It must be stressed that the cancer risk estimates, whether based on FGR 13 or BEIR VII, are for *excess* cancers, i.e., those induced by the radiation exposure and occurring *in addition to* the cancers that would have occurred in the absence of the radiation.

Others have pointed out that people in the United States are exposed to something on the order of 350 millirem per year from background radiation, suggesting any radiation exposures in that range are of no consequence. But again, the radiation doses being considered here are *on top of* any background exposures. And background radiation is *not* harmless.

The National Academy of Sciences' BEIR VII panel estimated that one person in 100 develops cancer just from the "low-Linear Energy Transfer" component of background radiation (about 100 of the 350 millirem estimated total background). Much of the rest of background is from indoor radon. The whole risk from total background is thus on the order of 3% of the population in the U.S. contracts cancer from background radiation.[8] And any additional radiation exposure is added on top of radiation that is already causing ~1 in 35 of us to get cancer, according to NAS. In a U.S. population of approximately 300,000,000, something on the order of ten million of us currently alive will get a cancer from background radiation. Background radiation may be natural, we may not be able to escape from it, but is clearly not safe.

5. The DHS Proposal to Make People Continue to Drink Radioactively Contaminated Water Contradicts Federal Policy at Other Contaminated Sites.

It is standard EPA Policy to provide replacement sources of drinking water (e.g., bottled water) at contaminated sites where drinking water supplies are otherwise affected over drinking water limits developed for a lifetime of exposure. For what EPA considers a confirmed human carcinogen, such as radionuclides, EPA will provide drinking water if the level of contamination is over Maximum Concentration Levels (the primary MCL for radionuclides is 4 millirem/year) or concentrations that correspond to a 1×10^{-4} cancer risk based on 70 years of drinking the

[8] 350 millirem/year, the figure EPA gives in its proposed Yucca rule as the average background dose in the U.S., would thus yield 0.35 rem/year x 70 years lifetime x 1.14×10^{-3} cancers/rem (BEIR VII) = 2.8×10^{-2} or 1 cancer per 36 people exposed. Technically, the radon exposure is of a high-LET type, but the conversion to risk for that type of radiation results in similar cancer rates.

water.[9] It makes no sense in the dirty bomb case to not do the same. Providing drinking water is not that difficult. For years the government has been able to provide drinking water after natural disasters.

We have not yet seen the concentrations that correspond to the DHS 500 mrem/yr drinking water Protective Action Guideline, so a direct comparison to EPA's standards for emergency response is not possible. However, it is likely the DHS drinking water approach for the *intermediate* phase will allow the drinking of water with contamination at least one hundred times higher than EPA would allow in *emergency* situations, and possible much higher than that. See EPA policy for providing drinking water during emergences in *Final Guidance on Numeric Removal action Levels for Contaminated Drinking Water Sites*, 25 October 2993, from Deborah Dietrich, Director, Emergency Response Division, EPA; *Numeric Removal Action Levels for Contaminated Drinking Water Sites,* 10 November 1998, OSWER Memorandum 9360.1-02B-P; and *Guidance Document for Providing Alternate Water Supplies,* February 1988, OSWER Directive 9355.3-03.

6. The DHS Proposal to Permit Contaminated Foodstuffs to Be Consumed and Placed into Commerce is Unwise from a Public Health Standpoint

One of the lessons of the Chernobyl experience is the importance of interdiction of contaminated foodstuffs. If soil and water are contaminated, and thus crops and other agricultural commodities such as milk and meat, interdicting the contaminated foodstuffs so that residents of the area consume clean food is essential. Additionally, one must prevent contaminated agricultural products from leaving the area in commerce, exposing people outside the immediately affected area to unacceptable radiation doses through consumption of foods grown in the affected area and shipped out in commerce. The DHS guidance will allow the spreading of cancer cases from the area of attack to other Americans.

[9] Furthermore, the MCLs are based on older, stricter methods of converting concentration to dose, so the difference between the MCLs and DHS's proposed 500 millirem/year water ingestion pathway is even larger than the apparent difference between 4 and 500 mrem.

EXHIBIT 1

2 DECEMBER 2004
GROUP LETTERS TO
DEPARTMENT OF HOMELAND SECURITY
AND
ENVIRONMENTAL PROTECTION AGENCY
PLUS ATTACHMENTS

2 December 2004

Secretary Tom Ridge
Department of Homeland Security
Washington, D.C. 20528

Dear Secretary Ridge:

We write to urge you to not issue lax cleanup standards for dirty bombs. The New York Times, National Public Radio, and other media outlets report that the Department of Homeland Security (DHS) may soon issue guidance for responding to and cleaning up after the detonation of a radiological weapon ("dirty bomb") or improvised nuclear device, should such an event ever occur in the United States. The news reports suggest that the guidance would relax cleanup standards compared to existing requirements for contaminated sites. What has not been formally disclosed to date is the degree of relaxation contemplated, and how many extra cancers could result from these radiation doses.

Two drafts of the guidance, however, have been obtained by the trade publication Inside EPA and posted on its website. These drafts suggest permitting very high radiation levels to remain after final cleanup, resulting in a significant number of cancers in the exposed population.

For example, the upper long-term cleanup standard recommended by the Department of Energy in the July 2003 draft was 2,000 millirem/year, including background. That is the equivalent, subtracting out average background values, of more than 8000 chest X-rays over the assumed 30 year exposure period. Such doses are estimated to produce one cancer in every twenty-five people exposed, according to the official radiation risk estimates used by the U.S. Government (see, e.g., Federal Guidance Report 13, Cancer Risk Coefficients for Environmental Exposure to Radionuclides). In the same draft, the Nuclear Regulatory Commission proposed a standard of 500 millirem/year, the equivalent of approximately 2,500 chest X-rays over thirty years, which would result in approximately one cancer in every eighty people exposed.

In the original draft, EPA objected to such lax long-term cleanup standards, arguing that they were far outside acceptable risk ranges, which generally will not permit exposures sufficient to produce more than one cancer per ten thousand people exposed. EPA recommended use of its existing standards for cleanups of contaminated sites under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, or Superfund). EPA, reportedly under pressure from the other agencies, subsequently withdrew its insistence that cleanup standards not exceed existing acceptable risk ranges. ["EPA Drops Backing for Superfund Levels in 'Dirty Bomb' Cleanups," Inside EPA, 21 November 2003].

The more recent "interim final" draft made public by Inside EPA attempts to finesse the differences between the agencies by removing any specific numerical values for long-term cleanup standards. Instead, the guidance merely refers to using "benchmark" values from national and international advisory bodies and federal and state agencies, which would presumably include the DOE and NRC proposals from the previous draft, as well as recommendations from outside organizations. Unfortunately, those cleanup "benchmarks" –

ranging from 100 millirem/year over thirty years to one hundred times that dose – and associated cancer risks fall far outside generally accepted risk ranges.

The 100 millirem/year benchmark over thirty years of exposure is officially predicted to result in one person developing cancer from that radiation for every few hundred people exposed. The 10,000 millirem/year upper "benchmark"—the equivalent of 50,000 chest X-rays over the assumed exposure period—is estimated to *result in radiation-induced cancer in approximately one quarter of the population exposed*. These benchmarks are 25 to 2,500 times greater than the maximum risk values considered acceptable by EPA for Superfund site cleanups.

These are not our risk estimates for such doses but those of the federal government. (All federal agencies use similar figures for estimating the number of cancers generated by radiation, derived primarily from studies by the National Academy of Sciences).

We recognize that early- and intermediate-phase response actions to a terrorist use of a radiological or nuclear device may require extraordinary measures, with initial doses outside of those allowed in normal circumstances. *However, we oppose final cleanup goals that allow long-term radiation exposures to the public and resulting cancer risks that are orders of magnitude greater than currently accepted for remediation of the nation's most contaminated sites* (i.e., those on the Superfund National Priority List).

An attack by a terrorist group using a "dirty bomb" or improvised nuclear device would be a terrible tragedy. Significantly enhanced measures should be taken to control the radioactive and fissile materials that can be used for such weapons, to prevent their falling into terrorist hands. But should such a radiological weapon go off in the U.S., our government should not compound the situation by employment of standards for cleaning up the radioactive contamination that are inadequately protective of the public.

(There is an apparent contradiction between claims by some that "dirty bombs" would cause little harm aside from public fear and the argument by agencies on the DHS taskforce establishing these guidelines that radioactive contamination could be so high that radiation doses to the public far beyond those normally permitted should be allowed for decades thereafter.)

We are concerned that such lax cleanup standards, with associated high radiation and cancer risk levels, would be considered. We urge you to assure that no cleanup guidance is adopted that—implicitly or explicitly—would permit radiation doses to the public of the magnitudes considered in earlier drafts.

We have enclosed correspondence with EPA Administrator Mike Leavitt and supporting material that provides more detail on these concerns.

Sincerely,

cc: EPA Administrator Michael Leavitt

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2 December 2004

Administrator Mike Leavitt
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Washington, DC 20460

Dear Administrator Leavitt:

A taskforce established by the Department of Homeland Security (DHS), including the Environmental Protection Agency (EPA), Department of Energy (DOE), Nuclear Regulatory Commission (NRC), and other agencies has been preparing guidance for responding to and cleaning up after the detonation of a radiological weapon ("dirty bomb") or improvised nuclear device ("IND"), should such an event ever occur in the United States. The New York Times, National Public Radio, and other media outlets report that DHS may soon issue guidance which suggests relaxing cleanup standards compared to those currently required for contaminated sites.

What has not been disclosed to date is the degree of relaxation contemplated, and how many extra cancers could result from these high radiation levels. We are troubled by the weakened cleanup standards apparently being contemplated and concerned that EPA has not made sufficiently clear to DHS that leaving behind such high levels of radioactivity would pose unacceptable risks to public health and safety.

Drafts of the guidance have been obtained and released by the trade publication Inside EPA. They suggest the use of "benchmarks" from national and international advisory bodies and state and federal agencies for setting final cleanup criteria. Those benchmarks range from allowing doses to the public of 100 millirem per year over thirty years (the equivalent of approximately 500 chest X-rays) to up to 10,000 millirem per year (equivalent to 50,000 chest X-rays). A quarter of the people exposed to doses at the upper benchmark level would develop cancer from their radiation exposure, according to the EPA's own official risk figures (see, e.g., Federal Guidance Report 13, Cancer Risk Coefficients for Environmental Exposure to Radionuclides). The lowest benchmark, 100 millirem/year, would result in a cancer in one out of every few hundred people exposed, according to the EPA official risk estimates.[1]

Leaving behind such high levels of radioactivity would pose risks to public health and safety long deemed unacceptable by EPA, which has historically defined acceptable exposures as those that would cause a cancer in one in a million to an outer limit of one in ten thousand people exposed.

[1] See Attachment A for a detailed explication of the cleanup "benchmarks" being considered, the magnitude of the radiation doses, what the cancer risk is from those doses according to EPA, and the degree to which these cleanup standards would exceed EPA's acceptable risk range.

As you know, EPA's longstanding position[2] has been that radiation exposures to the public are unacceptable in excess of:

- 4 millirem/year from beta- and photon-emitting radionuclides in drinking water (EPA's National Primary Drinking Water Regulations, 40 CFR 141.66)
- 10 millirem/year from air (EPA's National Emissions Standards for Hazardous Air Pollutants, 40 CFR 61)
- 15 millirem/year from high level waste disposal (Yucca Mt. rule, 40 CFR 197)
- ~5 - .05 millirem/year (1 in 10,000 to 1 in 1,000,000 risk) from contaminated sites (CERCLA/Superfund, 40 CFR 300.430(e)(2)(i)(A)(2))

Indeed, when other agencies have proposed setting relaxed cleanup standards for contaminated nuclear sites, EPA has consistently advocated doses and risks no greater than those identified above. For example, EPA strongly criticized a Nuclear Regulatory Commission proposal for a fallback cleanup standard of 100 millirem/year for nuclear reactor sites, noting that such a cleanup level would, according to NRC itself, cause a cancer in one in every two hundred people exposed.[3] Describing such doses and risks as "simply unacceptably high," EPA pointed out that "a 100 mrem dose would result in a risk that is seven times higher than would be permitted for other environmental pollutants under the Nation's laws governing the cleanup of contaminated sites.... To put it bluntly, radiation should not be treated as a privileged pollutant."[4]

EPA has insisted on cleanup of chemical carcinogens from terrorist attacks at levels consistent with its historic acceptable risk range of 1 excess cancer in 10,000 people exposed to 1 in a million. The cleanup of contaminants in the vicinity of the World Trade Center was performed to a 1 in 10,000 risk level. We do not understand why EPA should accede to the extraordinarily higher cancer risk levels contemplated in the new DHS guidance.

The DHS draft guidance, however, as released by Inside EPA, would permit doses in the immediate aftermath of a dirty bomb or IND attack of 5,000 millirem; 2,000 millirem additional dose through the rest of the first year; and subsequent years of the intermediate phase up to 1,500 millirem per year (500 mrem direct exposure, 500 mrem from contaminated food, and 500 mrem from drinking water). These latter figures alone are one hundred times what EPA generally permits in normal situations and at risk levels far above those permitted by EPA for the World Trade Center cleanup.

But even if one could argue that extraordinary radiation doses need to be permitted in the immediate and intermediate aftermath of a dirty bomb explosion (and EPA's current Protective Action Guides contemplate some emergency situations where such high doses may be

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[2] For a more detailed summary of EPA's standards for acceptable radiation exposure levels, see Attachment B.

[3] Statement on the NRC's Rule on Radiological Criteria for License Termination, Ramona Trovato, Director, EPA Office of Radiation and Indoor Air, 21 April 1997.

[4] ibid.

inescapable in the early phase), there is no reason why the long-term cleanup criteria should be dramatically more lax than EPA's current long-term cleanup criteria for radioactively contaminated sites. Yet, the draft DHS guidance suggests deferring to dose and/or risk "benchmarks" from sources such as national and international nuclear industry advisory organizations. Their proposed "benchmarks" range from a low of 100 millirem/year – a figure four times higher than the 25 millirem/year figure long opposed by EPA as far outside any acceptable risk range—to a high of 10,000 millirem/year.

As shown in the enclosed Table 1 in Attachment A, the proposed 100 millirem/year benchmark is estimated by EPA to produce a cancer in every few hundred people exposed, for an overall risk that is 25-2500 times higher than EPA's longstanding acceptable risk range. The proposed benchmark of 10,000 millirem per year would – by EPA's own official risk estimates for radiation-induced cancer, as set forth in Federal Guidance Report 13 – produce a cancer in one in every four members of the public exposed, 2,500-250,000 times higher than EPA's acceptable risk range.

When one looks at the total radiation doses the guidance contemplates would be permitted the public without triggering governmental protective actions such as relocation or cleanup through all phases of the post-explosion period, the cancer risks as estimated by your agency are very high. The aggregate lifetime dose to the public from exposure to radiation levels proposed by DHS as acceptable for the early, intermediate, and late response phases after a "dirty bomb" attack is approximately 14,000 millirem to more than 300,000 millirem, depending on which "benchmark" recommendation ends up being applied in the late cleanup stage (see Table 4). This is the equivalent of an exposed person receiving about 2,400 to 52,000 chest X-rays. The lower standard is assumed to result, according to the official risk estimates of EPA, in one cancer in roughly every 80 people exposed, while the upper benchmark would cause cancers in one quarter of the exposed population.

These are not our estimates of the cancer risks from the amounts of radiation being proposed as "acceptable" for response to and cleanup after a dirty bomb, but the estimates of your own agency. As the National Academy of Sciences (NAS) has pointed out, all agencies use "essentially the same assumptions about the risks posed by radiation exposure, in establishing radiation standards...." (Indeed, the agency radiation risk factors are derived from the NAS.) "[D]etermination of an acceptable risk for any exposure situation clearly is entirely a matter of judgment (risk-management policy) which presumably reflects societal values."[5] It is therefore disturbing that agencies would even contemplate such inadequate standards. This is particularly important since relaxation of cleanup standards for dirty bombs and INDs may create a precedent to relax such standards across the board.

EPA has consistently taken the position that doses to the public of 25 millirem/year are inappropriate, not protective of human health, and far outside EPA's acceptable risk range. However, DHS is considering permitting radiation levels to remain at the site as much as 400 times that unprotective level. Such a lax cleanup standard would pose a grave cancer risk to any exposed population.

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[5] Evaluation of Guidelines for Exposures to Technologically Enhanced Naturally Occurring Radioactive Materials, National Academy Press, 1999, p. 234.

In a large populated area affected by such a dirty bomb or IND, the remediation requirements contemplated in the draft DHS guidance could permit hundreds or thousands of cancer deaths. Indeed, contamination at these levels would be so high that it is almost certain that such an area – after being "cleaned up" consistent with these guidelines – would still be so radioactive that it would, under EPA's Hazard Ranking System, score far above the criteria for listing as a Superfund site, potentially requiring cleanup to begin all over again.

An attack by a terrorist group using a radiological weapon or IND in the United States would be a terrible tragedy. But we should not compound the situation by employing insufficient and dangerous radioactive cleanup standards that fail to protect the public.

EPA has historically stood fast against efforts to permit exposures in the 25 mrem/year range, let alone these other much higher levels. As Senator Dianne Feinstein said in her October 28, 2003, speech on the Senate floor during your confirmation:

> Among the most serious issues we face as a country is the risk of terrorism, and among the most worrisome of those threats is that a radiological dispersal device--a so-called "dirty bomb"—could be detonated. The Homeland Security Agency, with input from a number of other agencies including EPA, has been attempting to develop cleanup standards to remediate the radioactive contamination that could result from such an event. Some agencies have pushed for cleanup standards far more lax than EPA historically has viewed as protective of human health and the environment.
>
> Given the concern many in this Chamber have about EPA's public pronouncements regarding health risks from the World Trade Center tragedy, *I will be looking to the EPA Administrator to stand firm in insisting that any cleanup standards established for the aftermath of a ``dirty bomb'' terrorist event be fully protective of human health and the environment. These standards should be no less protective than EPA's existing standards for cleaning up radioactive contamination from non-terrorist causes such as spills and accidents.*
>
> (emphasis added)

We urge EPA to not abandon its longstanding positions regarding protecting the public from such hazards. We ask you to decline to sign off on these unacceptable dirty bomb cleanup standards, and take steps to assure the guidance that is finalized is truly protective of public health and the environment.

Sincerely,

cc w/ enclosures: DHS Secretary Ridge

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ATTACHMENT A

Table 1 Long-Term Cleanup Phase

Proposed Cleanup Benchmark[1]	= # of Chest X-rays Per Year[2] [Over 30 Years]	Risk of Cancer[3] (exponential)	=1 Cancer Per X People Exposed	Factor by Which EPA Acceptable Risk Range[4] Is Exceeded
100 mrem/year[5]	17 [500]	2.5×10^{-3}	400	25-2,500
500 mrem/year[6]	83 [2,500]	1.3×10^{-2}	80	130-13,000
1,000 mrem/year[7]	170 [5,000]	2.5×10^{-2}	40	250-25,000
2,000 mrem/year[8]	340 [10,000]	5×10^{-2}	20	500-50,000
10,000 mrem/year[9]	1,700 [50,000]	2.5×10^{-1}	4	2,500-250,000

Table 2 Early Phase

Proposed Protective Action Level	= # of Chest X-rays Per Year	Risk of Cancer (exponential)	=1 Cancer Per X People Exposed	Factor by Which EPA Acceptable Risk Range Is Exceeded
1,000 mrem[10]	170	8.46×10^{-4}	1,200	8-850
5,000 mrem/year[11]	830	4.23×10^{-3}	240	42-42,000

Table 3 Intermediate Phase

Proposed Levels 1st Year	Proposed Levels subsequent years[12]	# of Chest X-rays Per Year *[Over 3 Years[13]]*	Risk of Cancer (exponential)[14]	=1 Cancer Per X People Exposed	Factor by Which EPA Acceptable Risk Range Is Exceeded[15]
2,000 mrem 1st year		333	1.7×10^{-3}	600	17-1,700
	500 mrem/year– general exposure	83 *[250]*	1.3×10^{-3}	800	13-1,300
	+500 mrem/year – food interdiction	83 *[250]*	1.3×10^{-3}	800	13-1,300
	500 mrem/year	83 *[250]*	1.3×10^{-3}	800	13-1,300

	drinking water interdiction				
	Total 1,500 mrem/yr	250 *[750]*	3.8×10^{-3}	260	38-3,800

Table 4 Total Dose to Public from DHS Proposed Radiation Guidelines

Phase	Proposed Dose Level	= # of Chest X-rays	Risk of Cancer (exponential)	=1 Cancer Per X People Exposed	# of cancers produced if the exposed population is 10,000 people[16]	Factor by Which EPA Acceptable Risk Range Is Exceeded
Early	5,000 mrem	833	4.23×10^{-3}	240	42	
Intermediate – 1st yr	2,000 mrem 1st year	333	1.7×10^{-3}	600	17	
Yrs 2-4 (total)	4,500 mrem	750	3.8×10^{-3}	260	38	
Late Phase[17]	3,000-300,000 mrem[18]	500-50,000	2.5×10^{-3} – 2.5×10^{-1}	400-4	25-2,500	
Total[19]	**14,500 – 311,500 mrem**	**2,400 – 52,000**	**1.2×10^{-2} – 2.6×10^{-1}**	**80-4**	**120 – 2,600**	**120-12,000 - 2,600-260,000**

Endnotes

[1] The current draft Department of Homeland Security cleanup guidance, as released by the trade press, has no specific cleanup standards for the late phase cleanup, implicitly turning away from existing cleanup standards such as EPA's CERCLA requirements, and instead referring to unspecified 'benchmark" values proposed by nuclear advisory groups, and federal and state government agencies. We have therefore focused on such proposals, as from HPS and ICRP, and the DOE and NRC proposals made in an earlier draft of the DHS guidance, recognizing that there are far more protective standards in existence, such as EPA's historical cleanup standards, that could be – and should have been – adopted in the DHS guidance as the preferred benchmark.

[2] Standard chest X-ray ≈ 6 mrem. (General Accountability Office Report GAO/RCED-00-152, "Radiation Standards," fn. 3, page 7.) Doses vary by machine.

[3] Based on the official figure for cancer incidence risk of 8.46 $x10^{-4}$/person-rem, as set forth in Federal Guidance Report 13 (FGR 13). (Put more simply, 8-9 people are expected to come down with cancer from their radiation exposure if 10,000 people each receive 1 rem, or if 1000 people each receive 10 rem). Federal Guidance Report No. 13, *Cancer Risk Coefficients for Environmental Exposure to Radionuclides,* EPA 402-R-99-001, US EPA Office of Radiation and Indoor Air, funded by EPA, NRC, and DOE, September 1999, pp. 179, 182; http://www.epa.gov/radiation/docs/federal/402-r-99-00.pdf. FGR 13 provides estimates of fatal cancer risk of 5.75×10^{-4} per person-rem [5.75×10^{-2} per person-gray] and total cancer incidence or morbidity (fatal and nonfatal combined) of 8.46×10^{-4} per rem [8.46×10^{-2} per person-gray].

All federal agencies use approximately the same mortality risk factors, i.e. the Federal Guidance Report 13 figures cited above. See, e.g., *NRC Policy Statement on Below Regulatory Concern*, 3 July 1990, p. 8, and *NRC 10 CFR Part 20, et al. Radiological Criteria for License Termination; Final Rule*, July 21, 1997, Vol. 62 Federal Register 39058, 39061, noting its reliance on and the similarity of the Federal Guidance 13 and ICRP Publication 60 risk figures; and DOE *Environmental Assessment for the Energy Technology and Engineering Center,* DOE/EA-1345, p. C-3, March 2003. The minor differences between agencies – DOE and NRC at times use mortality figures of 5×10^{-4} / person-rem instead of the Federal Guidance Report 13 figure of 5.75×10^{-4}, particularly in pre-FGR 13 documents -- are inconsequential for the discussion here because of the high magnitude of the risk of the dose limits represented.

The agency risk estimates from radiation are in turn derived in large part from *Health Effects of Exposure to Low Levels of Ionizing Radiation,* the report by the National Academy of Sciences' Committee on the Biological Effects of Ionizing Radiation (BEIR V), 1990, which sets the risk of fatal cancer at 8×10^{-4} per person-rem. (See NAS BEIR V Report p. 6 and 172-3,5). EPA and other agencies rely upon the NAS numbers, but reduce the risk factor by a Dose and Dose Rate Effectiveness Factor (DDREF). No agency – nor the NAS – accepts the controversial argument put forward by some in the nuclear industry that there is a threshold below which radiation is completely safe, or may even be beneficial ("hormesis"), but all agencies depart from the linear model at low doses by reducing risks at low doses and dose rates by a DDREF of approximately 2, beyond the reduction from just linear scaling from higher doses.

When conducting site-specific risk assessments at Superfund sites, EPA uses isotopic-specific risk coefficients rather than rely on the more generic rem-to-cancer risk estimates cited here. However, this type of more accurate risk assessment is not possible prior to a radiological attack.

The assumed exposure period is 30 years, the presumption generally used by EPA's Superfund program for estimating exposure at Superfund sites (although EPA has in other instances assumed a full lifetime of exposure of 70 years.) For simplicity, we

have used the official government risk figures for cancer induction from radiation exposure and the less conservative 30-year rather than lifetime exposure assumption. True risks therefore may be higher than presented here, as people may live or work at the same location longer than 30 years, and several studies (e.g., of DOE radiation workers at Oak Ridge, Hanford, and Santa Susana) suggest ten-fold higher cancer risks than assumed in Federal Guidance 13.

If the half-life of the radioniuclide(s) involved were short, there may be a reduction of dose over the 30 year exposure period and therefore a reduction in risk from the figures cited above. If, however, the radionuclide(s) half-life were long, there may be no significant dose reduction in that period. Additionally, effects of weathering would need to be taken into account, but that would involve site-specific considerations.

[4] EPA has long set the acceptable risk range for cancer induction from exposure to contaminants (chemicals and radionuclides combined) as $10^{-4} – 10^{-6}$, or one cancer per 10,000 to 1,000,000 people exposed, with the starting point for acceptable risk being one in a million, falling back to no more than one in ten thousand if there are good reasons why the one in a million level cannot be obtained. See, e.g., CERCLA statute and EPA's implementing guidance. As EPA acknowledged in an earlier draft of the DHS guidance, there may be extraordinary circumstances regarding a dirty bomb requiring, in a particular case, going outside the normal risk range, but the basic cleanup standards should be based on the existing EPA CERCLA risk range.

[5] HPS suggested lower range [*Guidance for Protective Actions Following a Radiological Terrorist Event - Position Statement of the Health Physics Society*, January 2004. Ramona Trovato, in the EPA statement quoted in our letter, says NRC estimates the cancer risk of a 100 mrem/year cleanup standard as 1 in 200 (5×10^{-3}). We give it here as 2.5×10^{-3}. NRC presumably used a longer exposure time (e.g., lifetime) than the 30 years we assumed. Our risk figures here thus might be low (i.e., underestimate true risk) on that basis alone.

[6] HPS suggested upper range; DOE & NRC suggested benchmark [*Risk Management Framework for Radiological Dispersal Device (RDD)/ Improvised Nuclear Device (IND) Incidents (Guidance for Development of Countermeasures),* Rough Draft July 18, 2003, pp. 25, made by public by the trade publication *Inside EPA*

[7] ICRP suggested lower range [*Protecting People Against Radiation Exposure in the Aftermath of a Radiological Attack-- A Report from a Task Group of the ICRP*, Final TG Draft April 2004, p. 79

[8] DOE suggested upper range for long-term cleanup standard, DHS Rough Draft July 18, 2003, p. 28. The 2,000 mrem/year proposed limit includes background, which averages in the U.S. ~330 mrem/year, most of it from indoor radon. The 2,000 mrem/year limit

with background thus would average ~1,670 mrem/year above background. The contradiction between this value and the 500 mrem/year above background recommendation in the same paragraph is not explained in the DOE appendix to the DHS draft. The X-ray equivalence and risk figures in the succeeding columns for that row are based on the 2,000 mrem/yr figure (i.e., including background). Since all other of the proposed cleanup levels do not include background, to make them comparable, one would reduce the X-ray and risk figures for this one proposed standard by 330/2,000 = 16.5% to get the contribution from the radiation from the dirty bomb alone.

[9] ICRP suggested upper range

[10] Lower range of recommended protective actions of sheltering and/or evacuation of public

[11] Upper range of recommended protective actions of sheltering and/or evacuation of public

[12] These permitted doses are additive – i.e., one is permitted 500 mrem/year from general contamination such as soil contamination, 500 mrem/year from contaminated food, and 500 mrem/year from contaminated drinking water, for a total of 1,500 mrem/year each year of the intermediate phase after the first year.

[13] These limits are for subsequent years prior to the late phase cleanup. We here assume this takes three years, but it could be longer and the doses thus higher.

[14] For 1st year, risk for dose in that year. For subsequent years, risk for the 3 years following.

[15] The World Trade Center benchmark of aggressive cleanup of chemical toxic materials in apartments–comparable to the intermediate phase here – was accomplished with a 1×10^{-4} lifetime cancer risk cleanup benchmark assuming one year of exposure. These proposed radiation cleanup standards for the intermediate phase would be many times more lax than EPA permitted for the World Trade Center cleanup—a total risk of 5.5×10^{-3}, or 55 times the risk standard used by EPA for the World Trade Center cleanup. See *World Trade Center Indoor Air Assessment: Selecting Contaminants of Potential Concern and Setting Health-Based Benchmarks*, Prepared by the Contaminants of Potential Concern (COPC) Committee of the World Trade Center Indoor Air Taskforce Working Group, Peer Review Draft, September, 2002, pp. 11-12. The overall 30-year long-term cleanup benchmark used by EPA for cleanup of the surrounding area after the World Trade Center attack was also 1×10^{-4}. See *World Trade Center Indoor Environment Assessment: Selecting Contaminants of Potential Concern and Setting Health-Based Benchmarks* May 2003 Prepared by the Contaminants of Potential Concern (COPC) Committee of the World Trade Center Indoor Air Task Force Working Group, p. 58.

[16] Assume, for example, a dirty bomb going off in a crowded downtown metropolitan area where 10,000 people live and/or work in the affected zone. The number could be significantly larger under some radiological weapon scenarios in highly populated areas.

[17] Uses EPA common assumption of 30-year total exposure after cleanup is completed.

[18] Lower figure is based on 100 mrem/year benchmark, upper figure based on 10,000 mrem/year benchmark

[19] Similarly, the range for total exposure--taking into account immediate, intermediate, and late phase cleanup--is bracketed by the totals including the lower long-term cleanup benchmark on the one hand and the upper long-term cleanup benchmark on the other.

Attachment B

Summary of EPA Radiation Standards

Historically, EPA has employed cleanup standards that keep resulting risks of cancer incidence within a range of one in a million (1×10^{-6}) to one in ten thousand (1×10^{-4}). In non-cleanup settings, it has generally not permitted doses greater than 15 millirem/year.[1] It has consistently opposed proposed radiation limits that exceed these risk and dose ranges. The "benchmark" cleanup recommendations contemplated in the Department of Homeland Security dirty bomb cleanup guidance, from 100 mrem/year to 10,000 mrem/year, significantly exceed doses and risks EPA considers protective of public health.

Background and Explanation

EPA's Superfund (CERCLA) site cleanup program sets a goal of one-in-a-million (1×10^{-6}) excess risk of cancer as the point of departure; if that goal cannot be met, after consideration of nine balancing criteria, one can fall back to cancer incidence risk levels of no more than about one in ten thousand (1×10^{-4}). See 40 CFR 300.430(e)(2)(i)(A)(2). As noted below, EPA uses risk rather than dose for such cleanup standards, set for individual radionuclides; as a rough approximation, the 1×10^{-4} risk level corresponds to about 5 mrem/year over 30 years of exposure.)

EPA states that dose levels above 15 mrem/yr and drinking water levels over the maximum contaminant levels (MCLs, pegged for most radionuclides at 4 mrem/year) would not be considered protective for Superfund. In a letter to the Nuclear Regulatory Commission from its then Administrator Carol Browner, EPA opposed several changes NRC was considering in a final decommissioning rule from its proposed rule, stating that it considered

> "…increasing the proposed dose limit from 15 mrem/yr to as much as 30 mrem/yr and eliminating a separate requirement for protecting ground water that could be used as drinking water to the Maximum Contaminant Levels (MCLs) established under the Safe Drinking Water Act, to be disturbing… EPA would also consider NRC's rule to not be protective under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and not consistent with this and previous Administration's Ground Water Policy… If NRC were to promulgate its rule with the above-referenced changes, EPA would be forced to reconsider its policy exempting NRC sites from the NPL. This change in

[1] EPA has determined that its older radiation standards, set at doses of (a) 25 mrem/year whole body, 75 mrem/year to the thyroid, or 25 mrem/year to any critical organ other than the thyroid, or (b) 25 mrem/year whole body, 75 mrem/year to any critical organ, are equivalent to approximately 10 or 15 mrem/year ede respectively. See "Establishment of Cleanup Levels for CDERCLA Sites with Radioactive Contamination," August 22, 1997 EPA Memorandum from Stephen Luftig, Director, Office of Emergency and Remedial Response, and Larry Weinstock, Acting Director, Office of Radiation and Indoor Air, pp. 16, 17.

> EPA listing policy for the NPL would reflect the EPA view that NRC regulation would not be adequately protective of human health and the environment under CERCLA…"[2]

EPA does not use dose limits for its own standards for site cleanup, but rather the same cancer risk range that it uses for chemicals and that was used during cleanup efforts after the attack on the World Trade Center (e.g., the WTC cleanup was to 10^{-4} risk levels). In a policy statement to its regional offices that perform Superfund cleanups, EPA's Headquarters stated that "…site decision-makers should not use dose-based guidance rather than the CERCLA risk range in developing cleanup levels. This is because for several reasons, using dose-based guidance would result in unnecessary inconsistency regarding how radiological and non-radiological (chemical) contaminants are addressed at CERCLA sites."[3]

Under other environmental laws, EPA has at times used dose limits to protect the public from exposures to radionuclides. However, even under these non-Superfund laws, EPA has used the same 10^{-4} to 10^{-6} cancer risk range as its measure of acceptable exposure when developing dose limits.

For example in its recent rulemaking for the proposed Yucca Mountain nuclear waste repository, EPA picked a 15 mrem/yr standard with a separate groundwater standard of MCLs. EPA specifically rejected comments asking for dose levels of 25 and 70 mrem/yr. The Agency wrote that "EPA disagrees that the standard should be set at 25 mrem."[4] As part of its rationale EPA further wrote that 25 mrem/yr would be "…outside the preferred EPA lifetime risk range. In general, the Agency does not regulate above a risk of 1 x 10^{-4}…."[5]

The Agency stated that "EPA disagrees particularly strongly with the commenter who recommended a 70 mrem standard as adequately protective."[6] EPA wrote that a 70 mrem/yr standard "would result in a risk level at Yucca Mountain that is significantly higher than at any facility that falls under 40 CFR part 191, such as WIPP and future radioactive waste disposal facilities."[7]

In EPA's original rulemaking for the disposal of high level radioactive waste which was the source of its 15 mrem/yr standard for the Waste Isolation Pilot Project (WIPP), EPA cautioned that it considered this dose level to be so high that it was acceptable because "it involves only a small number of potential sites and would result in

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[2] Letter from Carol Browner to NRC Chairman Shirley Ann Jackson. February 7, 1997.
[3] Letter from Stephen Luftig, Director of EPA's Office of Emergency and Remediation Response and Stephen Page, Director of EPA's Office of Radiation and Indoor Air, to EPA's regional Superfund and radiation managers, December 17, 1999.
[4] Public Health and Environmental Radiation Protection Standards for Yucca Mountain, Nevada (40 CFR Part 197)—Final Rule; Response to Comments Document. June 2001. See page 4-5.
[5] ibid. In nuclear cleanup matters, EPA generally sets acceptable risk based on cancer incidence, not deaths. In the Yucca rulemaking, however, it relied upon cancer mortality risks.
[6] ibid.
[7] ibid.

only a small number of potential sites and would result in only a small number of people potentially being exposed to the maximum allowed individual risk."[8]

When developing standards that may result in large numbers of people being exposed to radionuclides, EPA has issued a dose limit of 10 mrem/yr. In a rulemaking for limiting exposure to radionuclides under the Clean Air Act, the Agency stated "the EPA will generally presume that if the risk to that individual is no higher than approximately 1 in 10 thousand, that risk level is considered acceptable and EPA, then considers the other health and risk factors to complete an overall judgment on acceptability. The presumptive level provides a benchmark for judging the acceptability of maximum individual risk, but does not constitute a rigid line for making that determination."[9] EPA issued a 10 mrem/yr standard (a cancer risk of approximately 2 x 10^{-4}) for DOE facilities, non-DOE facilities, NRC licensees, and uranium fuel cycle facilities.

In rejecting a comment calling for a 25 mrem/yr standard, EPA stated that "regarding the maximum lifetime risk limit, the EPA has considered the recommendation of the NCRP, ICRP, and other expert advisory committees and in the context of the source categories herein considered, has concluded that individual dose levels greater than 10 mrem/y ede are inconsistent with the requirements of section 112" [10] of the Clean Air Act.

For protecting the public from beta particle and photon radioactivity in drinking water, EPA has a standard of 4 mrem/yr.

The Department of Homeland Security (DHS) proposed limit for drinking water of 500 mrem/yr (this is 125 times greater than the EPA standard). However, it is probably significantly worse. This is because the EPA standard is based on an older dose methodology of 4 mrem/yr to the total body or any internal organ. EPA considered changing this standard to 4 mrem/yr using a newer dose methodology (effective dose equivalent or ede) that most federal agencies are using, including presumably DHS with its 500 mrem/yr limit for drinking water. Using the latest risk estimates in Federal Guidance Report 13, EPA found that "FGR-13 demonstrates that the current MCL of 4 mrem/year results in concentration limits that are within the 10^{-6} to 10^{-4} range." EPA rejected the idea of changing to the newer 4 mrem/yr ede MCL since Federal Guidance Report 13 demonstrates that the "proposed MCL of 4 mrem-ede/year results in concentration limits that are outside the 10^{-6} to 10^{-4} range." It is impossible to say how much worse the DHS limit might be without seeing a list of concentrations in drinking water that correspond to its 500 mrem/yr level and comparing these concentrations to the MCL federal drinking water limits.

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[8] Environmental Radiation Protection Standards for the Management and Disposal of Spent Nuclear Fuel, High-Level and Transuranic Radioactive Wastes; Final Rule (December 20, 1993) see Volume 58 Federal Register, page 66402

[9] National Emission Standards for Hazardous Air Pollutants; Radionuclides. December 15, 1989. see Volume 54 Federal Register, page 51658

[10] ibid., page 51686

EXHIBIT 2

27 JANUARY 2005
GROUP LETTERS TO
DEPARTMENT OF HOMELAND SECURITY
AND
ENVIRONMENTAL PROTECTION AGENCY

EPA Administrator Michael O. Leavitt
US EPA Headquarters 1101A
Ariel Rios Building
1200 Pennsylvania Ave., N.W.
Washington, DC 20460 January 27, 2005

Dear EPA Administrator Leavitt:

We urge EPA to maintain and strengthen its cleanup standards particularly at radioactively contaminated sites.

We ask for your active role in preventing adoption of the draft proposals for radioactive cleanup standards being proposed by the Department of Homeland Security in response to a dirty bomb attack. The guidance, which is expected to be published for comment shortly, is absolutely unacceptable as it would permit dangerously contaminated sites and serve as a precedent for weakening the EPA's existing cleanup standards, especially at Superfund sites.

EPA's current standards, including Superfund, require cleanup to a cancer-incidence risk range of one in a million to one in 10,000 cancers. Some of EPA's radiation standards are expressed in dose and do not exceed 15 millirems per year. Although many of us do not believe that this is protective enough, we strongly oppose any further weakening of it. The latest publicly available DHS draft allows the risk of getting cancer from the "cleaned up" site to be increased to 1 in 4! This is done by reference to international recommendations which would allow contamination to remain at a level of 10,000 millirems per year. DHS would allow routine lifetime annual exposures orders of magnitude higher than current background. As the attached letter indicates this is the equivalent of 50,000 chest x-rays (over 30 years of exposure and even more if people live and work in the area longer).

Attached are letters of opposition to these standards sent to EPA and DHS in December 2004 with supplemental technical details. We ask you to prevent any weakening of EPA's standards and to work to prevent DHS from adopting anything weaker than EPA's risk range.

Sincerely,

National Organizations

Lois Gibbs
Center for Health, Environment & Justice
Falls Church, Virginia

Elizabeth Crowe

Chemical Weapons Working Group
Berea, Kentucky

Richard Miller and Tom Carpenter
Government Accountability Project
Washington DC
Seattle, Washington

Alice Slater
Global Resource Action Center
New York, New York

Jane Browning
Learning Disabilities Association of America
Pittsburgh, Pennsylvania

Tara Thornton
Military Toxics Project
Lewiston, Maine

Carah Ong
Nuclear Age Peace Foundation
Santa Barbara, California

Becky Luening
Women's International League for Peace & Freedom
Humbolt, California

Aimee Boulanger
Women's Voices for the Earth
Bozeman, Montana

State and Regional Organizations

Janet Marsh Zeller
Blue Ridge Environmental Defense League
Glendale Springs, North Carolina

Teresa Mills
Buckeye Environmental Network
Grove City, Ohio

Katie Silberman
Center for Environmental Health
San Francisco, California

Deb Katz
Citizen Awareness Network
Shelburne Falls, Massachusetts

Coila Ash
Creative Commotion: Voices for Social Change
Santa Fe, New Mexico

Cynthia Babich
Del Amo Action Committee
San Pedro, California

Mitzi Bowman
Don't Waste Connecticut
New Haven, Connecticut

Tracey Easthope, MPH
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Ann Arbor, Michigan

Jan Conley
Environmental Association for Great Lakes Education
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Judith Johnsrud, PhD
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State College, Pennsylvania

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National City, California

Mike Belliveau
Environmental Health Strategy Center
Bangor, Maine

Daniel Parshley
Glynn Environmental Coalition
Brunswick, Georgia

Max Obuszewski
Hiroshima-Nagasaki Commemoration Committee
Baltimore, Maryland

Helen F. Norris

Holyoke City Councilor
Holyoke, Massachusetts

Jan Conley
Lake Superior Greens
Minneapolis, Minnesota

Kathyrn Moyes
Lawrence Environmental Action Group, Inc.
Lawrence, Massachusetts

Cynthia Valencic
Legal Environmental Assistance Foundation
Tallahassee, Florida

Kathyrn Moyes
Merrimack Valley Environmental Coalition
North Andover, Massachusetts

Lana Pollack
Michigan Environmental Council
Lansing, Michigan

Phyllis Glazer
Mothers Organized to Stop Environmental Sins
INCLUDE TOWN AND STATE

Joel Shufro
New York Committee for Occupational Safety & Health
New York, New York

Jason Babbie
New York Public Interest Research Group
New York, New York

Jim Warren
North Carolina Waste Awareness & Reduction Network
Durham, North Carolina

David Monk
Oregon Toxics Alliance
Eugene, Oregon

Jane Harris
Oregon Center for Environmental Health
Portland, Oregon

Matt Scholtes
Peace Action Wisconsin
Milwaukee, Wisconsin

E.M.T. O'Nan
Protect All Children's Environment
Marion, North Carolina

Brian Imus
Public Interest Research Group in Michigan
Ann Arbor, Michigan

Erin Hamby
Rocky Mountain Peace & Justice Center
Boulder, Colorado

Lynda Marin
Santa Cruz Weapons Inspection Team
Santa Cruz, California

Maureen Mulligan
Small Business Owner
Harrisburg, Pennsylvania

Doug Bullock
Solidarity Committee of the Capital District
Albany, New York

Inese Holte
TOXIC
Duluth, Minnesota

Matthew Wilson
Toxics Action Center
Boston, Massachusetts

Iris Salinas
La Raza Unida
Mission, Texas

Greg Wingard
Waste Action Project
Seattle, Washington

Honorable Tom Ridge
US Department of Homeland Security
Washington DC 20528 January 27, 2005

Dear Secretary Ridge:

We call on you to reject draft guidance for cleaning up "dirty bombs" that would allow cancer risk levels as high as 1 in 4 people. Such risks are completely unacceptable regardless of the cause of the contamination.

We live in communities impacted by hazardous, and in some cases, radioactive materials. Some of us are already living at or beyond the Environmental Protection Agency's "acceptable" cancer risk levels of 1 in a million to 1 in 10,000 at Superfund sites. It is unacceptable for DHS to even consider permitting radioactive dirty bomb contamination at levels higher than EPA's current cancer risk range.

The most recent DHS draft that has been made public indicates that DHS should rely on international and national recommendations to set permissible contamination levels, but ignores EPA's recommendation that cleanups be required to be at least as protective as Superfund sites.

We are especially concerned that such guidance will be used to weaken existing EPA cleanup standards. There is continual pressure to allow more contamination at "cleaned up" sites and we foresee and oppose the use of the DHS dirty bomb cleanup levels to justify less protection at both radioactive and hazardous sites in this country.

We add our voices to the many other concerned organizations that contacted EPA and DHS in December 2004 on this matter expressing concern "that such lax cleanup standards, with associated high radiation and cancer risk levels, would even be considered. We urge you to assure that no cleanup guidance is adopted that—implicitly or explicitly—would permit radiation doses to the public of the magnitudes considered in earlier drafts."

Attached are a summary of EPA's radiation protection standards and charts comparing the risks proposed by EPA versus those envisioned in the DHS rough draft and interim final draft guidance on dirty bomb cleanups as well as the letters of concern sent to EPA and DHS in December 2004. Please do not publish draft dirty bomb cleanup guidance that results in less security and safety for the American public.

Sincerely,

National Organizations

Lois Gibbs

Center for Health, Environment & Justice
Falls Church, Virginia

Elizabeth Crowe
Chemical Weapons Working Group
Berea, Kentucky

Richard Miller and Tom Carpenter
Government Accountability Project
Washington DC
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Judith Johnsrud, PhD
Environmental Coalition on Nuclear Power
State College, Pennsylvania

Albert Huang, Esq.
Environmental Health Coalition
National City, California

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