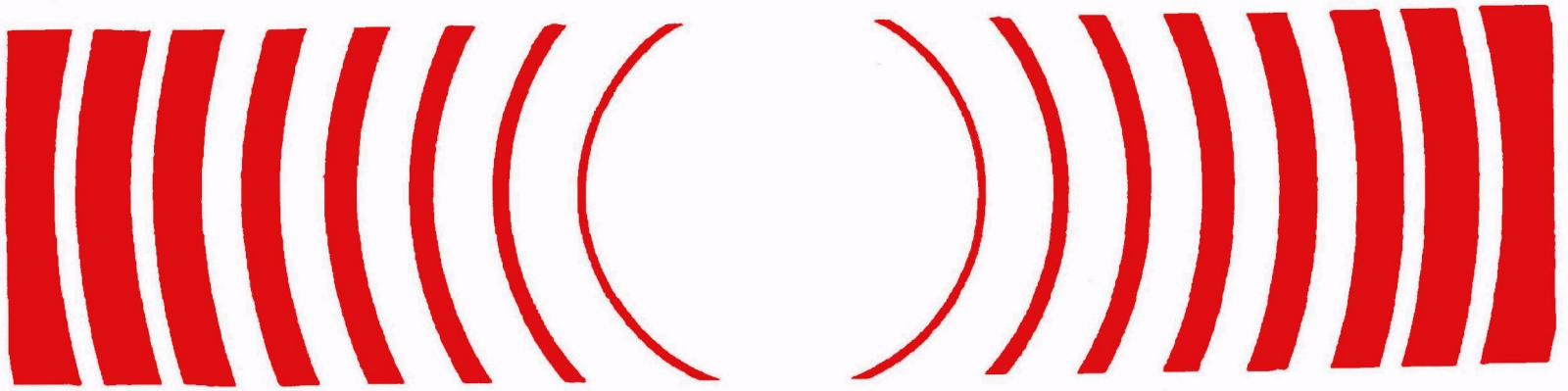
EPA United States Environmental Protection Agency

# Comments And Response To Comments

## Response to Comments: Amendment to Radionuclide NESHAPs (Part 40 CFR 61), Subpart H and Subpart I



40 CFR Part 61
National Emissions Standards
For Hazardous Air Pollutants
(Amendment to Incorporate ANSI/HPS N13.1-1999
in Subpart H and Subpart I)

EPA 402-R-02-001

# Response to Comments: Amendment to Radionuclide NESHAPs (Part 40 CFR 61), Subpart H and Subpart I

January 2002
U.S. Environmental Protection Agency
Office of Radiation and Indoor Air
Washington, D.C. 20460

# PREFACE

The Environmental Protection Agency (EPA) is promulgating amendments to 40 CFR Part 61, Subpart H and Subpart I, as it Applies to the Standards for Emissions of Radionuclides Other Than Radon from Department of Energy Facilities (Subpart H) and Standards for Radionuclide Emissions from Federal Facilities Other Than Nuclear Regulatory Commission Licensees and Not Covered by Subpart H (Subpart I). This Background Information Document (BID)–Response to Comments: Amendments to Radionuclide NESHAPs (Part 40 CFR 61), Subpart H and Subpart I has been prepared in support of the final rulemaking. It contains an introduction and general comments on EPA's approach, laboratory research and development, including information on sampling and certification and sampling statistics.

Copies of this BID, in whole or in part, are available to all interested persons. For additional information, contact Eleanor Thornton-Jones at (202) 564-9773 or write to:

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## 1. INTRODUCTION

On October 31, 1989, EPA promulgated the National Emissions Standards for Hazardous Air Pollutants (NESHAPs) under Section 112 of the Clean Air Act to control radionuclide emissions to the ambient air from a number of different source categories (54 FR 51654, December 15, 1989 (Docket A-94-60, Item II-A-1)). Subpart H of 40 CFR Part 61 defines facilities owned and operated by the Department of Energy (DOE) as one of the source categories subject to a NESHAP DOE administers many facilities, including government-owned, contractor-operated facilities across the country. Some facilities conduct nuclear energy and weapons research and development, some enrich uranium and produce plutonium for nuclear weapons and reactors, and some process, store and dispose of radioactive wastes. As DOE facilities mature and complete their mission, some facilities are now faced with decontamination and decommissioning.

In general, certain DOE facilities handle significant amounts of radioactive material and can emit radionuclides into the air. Some of the DOE facilities emitting radionuclides are on large sites covering hundreds of square miles in remote locations. Some of the smaller sites resemble typical industrial facilities and are located in suburban areas. DOE facilities emit a wide variety of radionuclides in various physical and chemical states. The purpose of Subpart H is to limit radionuclide emissions (not including radon) from the stacks and vents at DOE facilities so that no member of the public receives an effective dose equivalent of more than 10 millirem per year (mrem/yr).

Subpart I sets forth the NESHAP for non-DOE federal facilities (excluding NRC licensees). The facilities in this category can emit a variety of radionuclides. Individual facilities, however, may emit only one or two radionuclides affecting only one or two pathways. The purpose of Subpart I is to limit radionuclide emissions, including iodine, from the stacks and vents at non-DOE federal facilities including Department of Defense (DOD) and other research and industrial facilities so that no member of the public receives an effective dose equivalent of more than 10 mrem/year. Also, emissions of iodine shall not exceed an effective dose equivalent of 3 mrem/year to any member of the public.

Both Subparts H and I require emissions sampling, monitoring and calculations to identify compliance with the standard. Subpart H in section 62.93, and Subpart I in section 61.107, require continuous sampling and monitoring of radionuclide emissions at all release points that have a potential to discharge radionuclides into the air that could cause an effective dose equivalent in excess of 1% of the standard. In evaluating the potential of a release point to discharge radionuclides into the air, the estimated radionuclide release rates shall be based on the discharge of the effluent stream that would result if all pollution control equipment did not exist, but the facility's operations were otherwise normal. Subparts H and I currently incorporate by reference ANSI N13.1-1969, "Guide to Sampling Airborne Radioactive Materials in Nuclear Facilities" (Docket A-94-60, Item II-D-1).

However, in 1999, the American National Standards Institute revised ANSI N13.1-1 1969 to "ANSI/HPS N13.1-1999: Sampling and Monitoring Releases of Airborne Radioactive Substances from the Stacks and Ducts of Nuclear Facilities" (published as a supplement in the Health Physics Journal, May 1999) (Docket A-94-60, Item II-D-3).

A proposed amendment to incorporate ANSI/HPS N13.1-1999 into Subparts H and I was published in the May 9, 2000, Federal Register (65 FR 29934) (A-94-60, Item III-A-3). In developing this proposal, EPA reviewed the ANSI/HPS N13.1-1999 standard, conducted comparative analysis of ANSI/HPS N13.1-1999 with ANSI N13.1-1969 and Subpart H (Subparts H and I contain essentially the same language), held discussions with DOE and members of the ANSI work group, and reviewed and analyzed supporting materials. Based on this analysis, the proposed amendments required ANSI/HPS N13.1-1999 to be used for sampling any newly constructed source and any source undergoing modification, subject to continuous sampling.

The comment period for this proposed amendment initially lasted 30 days (from May 9, 2000 to June 9, 2000). EPA received a request for a public hearing, which was held on July 12, 2000. The comment period was extended as a result of this public hearing to August 14, 2000, and subsequently to October 6, 2000, after a request for this extension was made (65 FR 21198) (A-94-60, Item III-A-3). All comments were received before October 6, 2000, and were reviewed, analyzed and fully considered in developing the final amendment.

Comments concerning the proposed amendment were received from DOE, the Department of Defense (DoD), members of the ANSI working group that developed the revised sampling standard, environmental groups, various State departments of health and environmental protection and private citizens. The most significant issue raised in the comments was EPA's proposal to "grandfather" existing sources (i.e., not require upgrades to existing sampling systems). However, detailed responses to all comments received can be found in this document.

## 2. COMMENTS REGARDING PROPOSED RULE

### 2.1 Clarify Applicable Source

**2.1.1** The proposed rule makes use of the phrase "After October 1, 2000, for any newly constructed source...". This phrase is difficult to interpret because it is not clear how it applies to sources already under construction. The phrase could readily be replaced by the phrase "any new source." The term "new source" is defined at 40 CFR 61, section 61.02 as follows: "New source means any stationary source, the construction or modification of which is commenced after the publication in the Federal Register of proposed national emission standards for hazardous air pollutants which will be applicable to such source." (LLNL, DOE HQ, Los Alamos (docket numbers A-94-60, II-D-18, II-D-15 and II-D-13, respectively)

**Response: EPA agrees that it is preferable to use defined terms. The regulatory language is revised to the term new source, taken from section 61.02 as "any stationary source, the construction or modification of which is commenced after the publication in the FEDERAL REGISTER of proposed national emission standards for hazardous air pollutants which will be applicable to such source."**

**2.1.2** A definition for "new source" should be added under section 61.91. For example, "a new source is a source for which physical construction begins after October 1, 2000." (Oak Ridge, docket number A-94-60, II-D-17)

**Response: The definition for "new source" currently exist in section 61.02 as "any stationary source, the construction or modification of which is commenced after the publication in the FEDERAL REGISTER of proposed national emission standards for hazardous air pollutants which will be applicable to such source." EPA will retain the existing definition for new source.**

**2.1.3** The amendment applies to modifications resulting in an "effective dose equivalent to be greater than 1% of the standard." However, the application of this language to new sources is not as clear. In particular, please clarify whether this language applies to any newly constructed source or only to a newly constructed source "resulting in the effective dose equivalent to be greater than 1% of the standard." (Los Alamos, DOE HQ, docket numbers A-94-60, II-D-13 and II-D-15, respectively)

**Response: The final rules apply to newly constructed sources "resulting in the effective dose equivalent to be greater than 1% of the standard. Refer to section 61.93(e) and section**

**61.107(e) : "Radionuclide emission measurements in conformance with the requirements of paragraph (b) or (c) of this section shall be made at all release points which have a potential to discharge radionuclides into the air in quantities which could cause an effective dose equivalent in excess of 1% of the standard."**

**2.1.4** Sections 61.93(b)(1)(ii) and 61.93(b)(2)(ii) now states "for any newly constructed source and any source undergoing modification resulting in the effective dose equivalent to be greater than 1% of the standard as prescribed in Sec 61.92" should be changed to state "for any newly constructed source with new ventilation or sampling systems and any source undergoing modification to the ventilation or sampling systems resulting in an effective dose equivalent in excess of 1% of the standard as prescribed in 61.92" (Oak Ridge, docket number A-94-60, II-D-17)

**Response: The amendment language in section 61.93(c) is consistent with the language in section 61.93(b) and section 61.107(b). These sections do not specify which part of the sampling system is being modified. Any source undergoing modification, whether to the process or the ventilation, resulting in the effective dose equivalent to be greater than 1% of the standard (as prescribed in section 61.92) is required to meet the ANSI/HPS N13.1-1999 standard.**

**2.1.5** We suggest that ANSI N13.1-1969 be allowed on a case-by-case basis for certain sources of short duration such as cleanup of old tanks, buildings, and other types of remediation. Most of these projects are of short duration and do not lend themselves to the method of sampling prescribed by the proposed standard. Also for some of our decontamination and decommissioning activities, which are short term, we suggest implementation of the new standard only where there are significant modifications to the stack configuration. (DOE HQ, Oak Ridge, docket number A-94-60, II-D-15 and II-D-17)

**Response: Subparts H and I do not differentiate between sampling methodologies for short term and long term sources. The comments have not explained why or how ANSI/HPS N13.1-1999 is unsuitable for projects of short duration. Further, our review has not identified technical or economic hurdles that necessarily would preclude the use of ANSI/HPS N13.1-1999 overall for short term sources. EPA does recognize, however, that in some situations, it may be impractical to use required sampling systems. Therefore, the existing rule language, at section 61.93(d), allows the use of "alternative effluent flow rate measurement procedures or site selection and sample extraction procedures..." provided they are appropriately documented and approved in advance by EPA. To obtain such approval, DOE would need to justify why the ANSI/HPS N13.1-1999 requirements are impractical and that the use of ANSI N13.1-1969 clearly will not significantly underestimate**

**emissions. Thus, the existing rule (section 61.93(d)) already provides monitoring flexibility on a case by case basis as requested.**

**2.1.6** The criteria for a significant modification (any modification resulting in an EDE > 0.1 mrem/yr) does not give a means of determining what would constitute a significant modification for major sources (whose emissions already result in an EDE > 0.1 mrem/yr). (Oak Ridge, DOE HQ, Brookhaven, docket numbers A-94-60, II-D-17, II-D-15 and II-D-14, respectively)

**Response: EPA has not defined a "significant" modification. If after modification, a source becomes or continues to be a major source (i.e., release points which have a potential to discharge radionuclides into the air in quantities which could cause an effective dose equivalent in excess of 1% of the standard), then the requirements of section 61.93(c) and thus ANSI/HPS N13.1-1999 will apply. EPA does recognize that certain routine activities do not constitute modifications. In cases where modifications are not expected to affect releases, ventilation, or sampling systems, DOE may choose to request that another sampling system be allowed under section 61.93(d). See also Response to Comment 2.1.4.**

**2.1.7** If the proposed revision stands, a flow chart or table would make identifying the applicable requirements for an existing or newly constructed or modified stack more efficient. (DOE HQ, docket number A-94-60, II-F-2)

**Response: The rule language has been modified from the proposed rule to clarify what requirements apply to existing and to new or modified stacks. For new stacks, the requirements of ANSI/HPS N13.1-1999 will apply to sampling (section 61.93(c)). For existing stacks, the previous sampling methods - based on Appendix A and ANSI N13.1-1969 - remain acceptable; the use of ANSI/HPS N13.1-1999 is also allowed for existing sources (section 61.93(b)).**

**2.1.8** The annual NESHAPs reported an effective dose equivalent of 0.13 mrem/yr to the public for 1999, and therefore, BNL is at/close to the threshold limit (0.10 mrem/yr) below which only periodic sampling is required for NESHAPs compliance. However, BNL has implemented continuous stack sampling and monitoring at the present time to protect the public and the environment as BNL is just above the threshold limit (without rounding the significant figures). Any new or modification to ventilation and/or stack system in the future must be evaluated for NESHAPs compliance. (Brookhaven, docket number A-94-60, II-D-14)

**Response: Any new or modified sources with potential to emit greater than 1% of the standard must be upgraded to meet ANSI/HPS N13.1-1999 for NESHAPs compliance. The application of any of the provisions in the final rule is based on potential to emit, not actual emissions.**

## 2.2 Potential Emissions vs. Actual Emissions

**2.2.1** The wording of the fourth paragraph of Regulatory History and the introductory sentences of 61.93 (b)(1)(ii) and 61.93 (b)(2)(ii) leave the impression that of the new sources, only those with actual emissions exceeding 1% of the standard would have to meet the regulation for continuous sampling or monitoring. This would contradict what is said elsewhere in the regulation where the criterion for continuous sampling/monitoring was based on potential unabated emissions. Better wording is needed to clarify the intent. (ANSI committee, DOE HQ, Los Alamos, Washington State Department of Health, docket numbers A-94-60, II-D-12, II-d_15, II-D-13 and IV-D-23, respectively)

**Response: The final amendment has been clarified and is consistent with the original standard. For example, in Subpart H, section 61.93(f) states: "To determine whether a release point is subject to the emission measurement requirements of paragraph (b) or (c) of this section, it is necessary to evaluate the potential for radionuclide emissions for that release point. In evaluating the potential of a release point to discharge radionuclides into the air for the purposes of this section, the estimated radionuclide release rates shall be based on the discharge of the effluent stream that would result, if all pollution control equipment did not exist, but the facilities operations were otherwise normal.**

**2.2.2** The proposed rule makes use of the phrase "any source undergoing modification resulting in the effective dose equivalent to be greater than 1% of the standard as prescribed in section 61.92." This phrase is very difficult to interpret. The reference to section 61.92 is a reference to the overall dose standard of 10 mrem/y, which is a calculated value that includes emission controls. However, section 61.93(b)(4)(i) and section 61.93(b)(4)(ii) state emissions measurements shall be made of discharges that would cause a dose in excess of 1% of the standard and that the effluent stream should be evaluated as if all pollution control equipment did not exist. It is unclear how modified source emissions are to be evaluated, with or without controls.

We believe that the dose that triggers the implementation of the new ANSI standard should be calculated including emission controls. The alternative interpretation would require all existing monitored facilities to upgrade to the new standard upon any modification. We suggest the following wording for section 61.93(b)(1)(ii) and at section 61.93(b)(2)(ii): "For any source undergoing modification resulting in the effective dose equivalent greater than 1% of the standard prescribed in section 61.92 as determined including all reductions provided by pollution control equipment, or for any new source." (LLNL, DOE HQ, Los Alamos, docket numbers A-94-60, II-D-18, II-D-15 and II-D-13, respectively)

**Response: The intent of these amendments is to be consistent with the current standards.**

**The current standards, Subparts H and I, require evaluating estimated radionuclide release rate as if all pollution control equipment did not exist (refer to section 61.93(f) and section 61.107(f). Therefore, the dose that triggers the implementation of the new ANSI standard for new or modified sources (modifications resulting in the effective dose equivalent to be greater than 1% of the standard as prescribed in section 61.92) is calculated assuming no emission controls.**

**2.3 QA Requirements**

**2.3.1** 40 CFR 61.93(b)(2)(i)(D) and (ii)(D). These paragraphs require two different QA programs, one for existing sources and one for new or modified sources. We suggest that only one set, Appendix B, Method 114, apply. It provides an outline of a quality assurance plan, and would also enable facilities with compliant QA programs to continue operating. The ANSI quality assurance specification seems to have the elements of the Method 114 outline but more detail. (DOE HQ, Los Alamos, docket numbers A-94-60, II-D-15 and II-D-13)

**Response: The QA requirements must be consistent with the respective ANSI standard. For ANSI N13.1-1969, the QA requirements of Appendix B Method 114 are used. For ANSI/HPS N13.1-1999, the QA requirements found in this standard are used. We believe this is appropriate to ensure full compliance with the applicable ANSI methodology.**

**2.3.2** Section 61.93 (b)(1) (i and ii) ( C and D) - The distinction between paragraphs C and D is unclear. Consequently, the differing requirements are confusing. These two paragraphs would be clearer if combined. Also, Method 114 cites the old version of the standard and could result in some misunderstanding. (ANSI committee, docket number A-94-60, II-D-12)

**Response: section 61.93 (b)(1)(i) or (ii) does not contain a part D and Appendix B, Method 114, Section 2.1, has been updated to cite ANSI/HPS N13.1-1999 in Section 2.1.**

**2.3.3** The importance of performing the maintenance and inspections set forth in ANSI/HPS N13.1-1999, clause 7.5, Maintenance and inspection requirements, cannot be overstated (Why would EPA grandfather an out-of-date standard that does not require inspections and maintenance that would help insure that quality data are being collected?). (Washington State Department of Health and ANSI committee, docket numbers A-94-60, IV-D-23 and IV-D-3 respectively)

**Response: EPA agrees that the inspection requirements in ANSI 13.1-1999 provide for greater assurance that monitoring systems are operating as intended. As suggested by several comments, such assurances are important regardless of the sampling methodology**

**being used. In response to the comments, the final rule makes more rigorous inspection requirements applicable to all sources by including updated requirements in the QA sections of Appendix B, Method 114 that are substantially similar to the criteria found in Table 5 - "Summary of Maintenance, Calibration, and Field Check Requirements" of ANSI/HPS N13.1-1999.**

## 2.4 Use of "Parts" of ANSI/HPS N13.1-1999

**2.4.1** Many methods within ANSI/HPS N13.1-1999 could be useful to facilities attempting to comply with 40 CFR 61. However, the proposed language provides disincentives for facilities to utilize these methods. If the EPA wishes to facilitate the use of the various technologies, techniques and procedures identified in the ANSI/HPS N13.1-1999 methodology, more flexibility is necessary. As written, facilities that are unable to comply with all of the requirements of ANSI/HPS N13.1-1999 for unavoidable reasons, such as stack configuration, will be forced not to adopt those sections of ANSI/HPS N13.1-1999 with which they can comply. (Los Alamos) Also, there are existing sampling systems that meet the revised standard. (ANSI committee, docket number A-94-60, II-D-13)

**Response: EPA would like to encourage use of ANSI/HPS N13.1-1999 techniques for existing stacks. Therefore, ANSI/HPS N13.1-1999 is approved in full as an alternate methodology. We recognize there may be situations where some portions of ANSI/HPS N13.1-1999 can be applied appropriately to existing stacks without complete conversion. However, it is difficult to predict the situations, so specific provisions are not made in the final amendment. Instead, a facility may use a part of ANSI/HPS N13.1-1999 on existing sources with prior approval from the appropriate EPA region. This would be treated as an alternative methodology under section 61.93(d).**

**2.4.2** "A. Justification of Proposal." In the referenced November 1994 letter from Nichols, EPA, to DOE a number of conditions are set forth for the use of the shrouded probe that are not included in the ANSI/HPS N13.1-1999. EPA should make clear in the amended regulation that for all single point sampling systems installed in DOE facilities after the effective date, only ANSI/HPS N13.1-1999 will apply. (DOE HQ, docket number A-94-60, II-D-15)

**Response: The November 1994 memo from EPA to DOE outlines the requirements for the use of the shrouded probe as a tool for single point representative samples. These are the same criteria outlined in ANSI/HPS N13.1-1999. Nevertheless, for all single point sampling systems installed in DOE facilities after the effective date, only ANSI/HPS N13.1-1999 will apply.**

**2.4.3** The proposed language is still not clear on what sections of ANSI/HPS N13.1-1999 are to be applied. This is critical because many aspects of ANSI/HPS N13.1-1999 go well beyond just the incorporation/utilization of single point sampling.

Does the EPA intend that DOE facilities comply with the many additional requirements of the ANSI/HPS N13.1-1999 guidance, such as

Installing in-line, real time monitoring with alarms for some sources (4.3.1),

-Designing sampling or monitoring systems so that "accidental or off-normal conditions can be sampled or detected" (4.3.2) and

-Ensuring sources with PEDE > 0.001 mrem (i.e., PIC I, II, and III) meet "all requirements for sample extraction location, instrument calibration and maintenance, sample handling..." (4.4).

If so, this seems to far exceed the EPA's intent for adoption of this ANSI standard. Most notably, when discussing the purpose of the ANSI/HPS N13.1-1999 standard (see section B of the Preamble), only the use of single point sampling is specifically identified as a significant improvement in the standard. (Los Alamos, docket number A-94-60, II-D-13)

**Response: It is our intent with the amendment of Subparts H and I to include <u>all</u> of ANSI/HPS N13.1-1999 where outlined in the final amendment.**

**In addition to single point sampling, other principal features of ANSI/HPS N13.1-1999 are: (1) Suitability of a sampling location based on specification of the uniformity of the velocity and contaminant concentration profiles (2) An acceptable level of flow swirl (3) A maximum relative level of contaminant at any location across the cross section of the stack or duct (4) Performance criteria for an acceptable probe (5) A numerical criterion on the minimum fraction of aerosol particles that penetrate the sampling system from the stack gas to the collector or analyzer (6) A statement that the number of bends in the sample transport line shall be minimal (7) Periodic checks and maintenance must be performed and (8) A quality assurance program that covers personnel, equipment, and data handling. EPA's standards establish a threshold (>1% of the standard) above which ANSI/HPS N13.1-1999 must be applied. For lower levels, application of ANSI is not required by EPA but may be desirable. See also Response to Comments 2.4.4.**

**2.4.4** At some point there needs to be guidance on what parts of the standard are to be used, such as the PIC categories vs. the old "major/minor" categorization. (Oak Ridge, docket number A-94-60, II-D-17)

**Response: All of ANSI/HPS N13.1-1999 is to be used where required. Concerning Table 2 of the PIC categories in ANSI/HPS N13.1-1999, it is stated in ANSI/HPS N13.1-1999 that "There is no one graded approach that would be appropriate for all facilities. The fractions of allowable dose limits proposed in table 2 are illustrative, and therefore shall be considered superseded by regulatory requirements. They exemplify how a dose limit standard can be associated with a graded approach to planning for sampling..." The EPA requirement to calculate the dose based on potential to discharge remains unchanged, and the criteria for continuous monitoring is unchanged.**

**2.4.5** Section 61.93 (b)(2)(i)(A) (first sentence) - The method used for selecting flow measuring sites does not have to be the same as that used for selecting sample withdrawal points. There are existing stacks that meet ANSI/HPS N13.1-1999. It would be better to recognize this by allowing a choice of using either the "8 and 2" rule of Method 1 or the preferred ANSI/HPS N13.1-1999. Of course, we feel that the "2.5 and 0.5" alternative rule of Method 1 should be avoided, unless good mixing is demonstrated as defined in ANSI/HPS N13.1-1999. (ANSI committee, docket number A-94-60, II-D-12)

**Response: If existing stacks would like to use other methods not cited in the regulation, then in accordance with section 61.93(d), a facility owner or operator may use alternative effluent flow rate measurement procedures or site selection and sample extraction procedures provided that prior approval is received from EPA.**

**2.5 Pipes and Small Vents vs. Stacks and Large Vents**

40 CFR 61.93(b)(1)(i)(A)and (B). Since the sources treated in these two paragraphs are independent of each other, the flow measurement methodologies for pipes and small vents should not be based on the methodology used for stacks and large vents. We recommend rewording 40 CFR 61.93 (b)(1)(i)(B) for pipes and small vents as follows:

"Reference Method 2A to Part 60 of this chapter or ANSI/HPS N13.1-1999 "Sampling and Monitoring Releases of Airborne Radioactive Substances from Stacks and Ducts of Nuclear Facilities" (incorporated by reference see section 61.18) shall be used to determine velocity and volumetric flow rates for pipes and small vents." (DOE HQ, Los Alamos, docket number A-94-60, II-D-15 and II-D-13, respectively)

**Response: The current regulation, Subpart H, section 61.93(b)(1)(i) and (ii) state: "Reference Method 2 of appendix A to part 60 shall be used to determine velocity and volumetric flow rates for stacks and large vents. Reference Method 2A of appendix A to part 60 shall be used to measure flow rates through pipes and small vents." The amendment**

**of Subpart H keeps this same consistency for existing sources: Use Reference Method 2 of appendix A to part 60 for stacks and large vents and use Reference Method 2A of appendix A for pipes and small vents. The amendment of Subpart H simply includes the requirement for using ANSI/HPS N13.1-1999 for new and modified sources to determine velocity and volumetric flow rates for stacks, large vents, pipes and small vents. If a facility feels that it is impractical to measure the effluent flow rate with the stated references, then in accordance with section 61.93(d), a facility may request to use alternative effluent flow rate measurement procedures.**

## 2.6 Justify The Grandfather Clause

**2.6.1** The proposed blank exception (exclude all existing systems from a requirement to upgrade) is unnecessary and unacceptable. The current stack monitoring systems are now known to be deficient in monitoring the very category of radioactive effluent emissions capable of causing the greatest public doses if left undetected. It is interesting that the only supporting documentation offered in the Preamble is DOE correspondence regarding its own position, rather than an externally developed and peer reviewed assessment. Furthermore, it is unacceptable for EPA to consider grandfathering all existing ANSI N13.1-1969 systems because of cost when the cost of grandfathering is minuscule compared with the DOE budget and small even by other standards. Evidence is needed to support upgrading is costly. One of EPA's role is to protect public health and welfare. Therefore, it is necessary to explain how EPA factored in those costs when it decided to grandfather existing systems because of cost considerations.

A better option is to apply the exception to site-specific, stack specific issues where explicit consideration of technical complexities, cost, or a concrete timetable for the total elimination of the source through D&D, replacement or retirement is justified in a detailed proposal to the appropriate regional EPA office. This option would eliminate the proposed combined requirements of ANSI N13.1-1969 and ANSI/HPS N13.1-1999. Also note that it has been possible to carry out an upgrade without complete removal of systems, without extensive retrofitting of monitoring devices and lines in existing stacks, without in-situ tests and flow measurements, and without rework of the stacks. It was accomplished by utilizing an ingenious add-on generic mixer design in which the entire requirement for aerosol mixing, single point sampling, and extraction to a sample collection filter is met in a single add-on mixer/sampling unit designed, tested, and built in a shop without touching the facility systems, and then attached as an extension to existing stack without disturbing any of the internal, potentially contaminated components. Perhaps the generic mixer/monitor technology demonstrated by Texas A&M University will not apply in every case, but it can be applied, in one form or another, to an astoundingly large number of existing stacks where the more invasive approach is impractical.

Nevertheless, in keeping with the ANSI N13.1-1969 standard, it is therefore incumbent on EPA to justify the inherent risk of avoidable public exposure in excess of the 10 mrem/yr limit that follows from their blanket exemption of existing stacks. ANSI N13.1-1969 contains only recommendations, preferences, and guidance. The lack of clear requirements was one motive for

revising the standard. (ANSI Committee, Washington State Department of Health, docket numbers A-94-60, II-D-12, IV-D-3 and IV-D-23)

**Response: The following outlines the incorporation of the new ANSI/HPS N13.1-1999 standard into Subparts H and I:**

**1. Radionuclide emission rates from existing point sources, where the potential to emit exceeds 0.1 mrem/yr, will be measured in accordance with the procedure set forth in ANSI N13.1-1969 or other procedure for which EPA has granted prior approval. Existing sources are allowed the option of upgrading sampling systems to meet the requirements of ANSI/HPS N13.1-1999.**

**2. Radionuclide emission rates from new point sources as defined in Subpart A (including modified sources) where the potential to emit exceeds 0.1 mrem/yr will be measured using the procedure set forth in ANSI/HPS N13.1-1999 or other procedure for which EPA has granted prior approval.**

**3. To ensure optimum operation of all sampling systems, Appendix B, Method 114 will be updated to provide more specific and more rigorous inspection requirements.**

**In addition, EPA plans to pursue an MOU with DOE which would provide a mechanism for EPA and DOE to work together to identify and retrofit existing sources where they may be significantly improved by the use of the ANSI/HPS N13.1-1999 standard.**

**EPA chose this approach after conducting an extensive research and investigative effort to ensure proper and adequate incorporation of the ANSI/HPS N13.1-1999 standard. This effort included an independent analysis of ANSI/HPS N13.1-1999, solicitation of analysis from all interested parties, examination of current effective dose equivalent (EDE) to the maximally exposed individual (MEI) for major sources and consideration of cost to upgrade existing sources.**

**EPA is not aware of any data that indicate that the compliance status of any source is likely to be changed by the adoption of the requirement of ANSI/HPS N13.1-1999. EPA's analysis included an effort to solicit field data pertaining to the performance of ANSI/HPS N13.1-1999. Despite multiple requests to experts in this area (including commentators), we did not find such data available and so did not discuss it in the proposed rule. Comments on the proposal, including claims that regulatory violations or health threats might result from not upgrading existing stacks, emphasized the potential value of field data in assessing the real world implications of changes to sampling systems. However, of all those solicited, only DOE provided data allowing a direct comparison of ANSI N13.1-1969 and ANSI/HPS N13.1-1999. The DOE sent data from Los Alamos National Laboratory, Savannah River Site and Rocky Flats which indicated that for stacks retrofitted with a shrouded probe, the**

representativeness of the sample did not change with the use of the multiple nozzle rake compared to the shrouded probe. In particular, the Savannah River Site (SRS) has installed single point sampling systems on over 40 radionuclide air emission sources since 1996:

> "A shrouded probe was installed on these sources as part of upgrades done for operational purposes. Both the ANSI/HPS N13.1-1999 suggested inventory method and the Appendix D to 40 CFR 61 method have been used to evaluate the potential to emit radionuclide (PEDE). Therefore, they allow for direct comparison of results using the ANSI N13.1-1969 and ANSI/HPS N13.1-1999 methodologies. The actual measured emissions both before and after the upgrade to single point sampling are on the order of 0.00001 mrem/yr. These sources are considered major sources which represent a wide range and number of DOE sources across its facilities. Based on these 41 sources, during normal operations, there is no noticeable difference in the before and after alpha and beta/gamma data. Therefore, the installation of the single point sampling systems did not significantly affect the sample results and would not significantly affect compliance with Subpart H."(Docket Number A-94-60, IV-D-22)

Additional information affecting the language of the final amendment to Subparts H and I was the evaluation of recent reported effective dose equivalent (EDE) to the maximally exposed individual (MEI) at DOE facilities. Twenty seven DOE facilities submitted Subpart H reports to EPA headquarters before June 30$^{th}$ for the year 2000. No facilities were out of compliance. Four of these facilities (15%) reported an EDE to the nearest MEI to be greater than 1% of the 10 mrem/year standard while 23 facilities (85%) reported a total EDE to the nearest MEI to be less than 10% of the 10 mrem/year standard. The highest EDE came from the Fernald facility at 1 mrem. Fernald is in the process of decontamination and decommissioning (D&D) and removing material from the Waste Pits for treatment and disposal.

Upon examination of the Hanford facility (EPA picked Hanford for this particular discussion because it is one of DOE's largest facilities) year 2000 report, it was noted that there were 26 major point sources. (A point source is designated as major when its potential maximum emissions after all treatment controls have been hypothetically removed can cause the highest potential exposure to receive greater than 0.1 mrem/yr EDE.) The reported EDE for the MEI ranged from $7.4X10^{-13}$ to $4.5X10^{-2}$ mrem/yr. These reported doses support EPA's conclusion reached during the proposal development and discussed earlier that there is likely no implications from the changes to the past and future compliance of DOE facilities to go to a performance based standard.

Finally, another issue for the upgrade of existing sources to meet the ANSI/HPS N13.1-1999 standard was the cost associated with such an effort. EPA received cost estimates from both DOE and the ANSI work group (A-94-60, Docket Numbers IV-D-7 and IV-D-3). These cost estimates to upgrade an existing system ranged from $65,000 to $2.5 million. Because of the widely divergent cost estimates, EPA sought an independent opinion from a party with no involvement in these amendments. The EPA contacted Andersen Instruments, Inc., a well established company responsible for the design, construction and placement of the shrouded probe for several DOE facilities to determine the cost for upgrading existing sampling systems to meet the ANSI/HPS N13.1-1999 standard. The following statement was presented to EPA by Andersen Instruments, Inc.:

> "Any existing sampling system even though it meets the multi-point criteria of US EPA Method 1 and Appendix A of ANSI/HPS N13.1-1999 must, at a minimum, conduct the single-point sampling qualification testing. Andersen Instruments feels this task can be accomplished at a cost of $5,000 per stack. Since May 1996, over 45 sources have been upgraded from the ANSI type isokinetic sample probe to a single point sampling probe utilizing the shrouded probe technology. The actual cost for installing a shrouded probe and a simple sample box with manual flow control was $100,000 per source. Andersen Instruments feels this cost is accurate if this cost includes labor, engineering and hardware." (Docket Number A-94-60, IV-C-2)

As for the generic mixer that the commentator mentioned, one was used at Rocky Flats. According to the EPA representative for Rocky Flats, it appeared that installing this generic mixer was not a simple exercise. This generic mixer had to be constructed to suit the design of the building as well as the selected discharge line. Therefore, this generic mixer was so large that before it could be hoisted to sit on top of a three story building, the building itself had to be evaluated for its structural integrity and pads were then added to support this generic mixer. The time to complete this exercise was well over a year and the cost was over $100,000. This experience indicates that even the use of an add on mixer may not reduce the cost of upgrading existing sampling systems. EPA concludes that it is not feasible to assume that the generic mixer could be used in widespread practice.

These are some of the major factors that were considered when determining how to implement the ANSI/HPS N13.1-1999 standard. ANSI/HPS N13.1-1999 was published in the May 1999 Health Physics Journal and incorporates the advances in sampling and monitoring methodology over 30 years. To date, EPA knows of no data showing simultaneous sampling by multiple point rakes and shrouded probes which would lead to different compliance conclusions. Coupling this lack of field performance data with the approximate cost to upgrade an existing source of at least $100,000, EPA does not believe it

**is justifiable - on public health or economic grounds - to require that existing sources be upgraded to meet ANSI/HPS N13.1-1999.**

**EPA acknowledges the extensive effort in creating ANSI/HPS N13.1-1999, an innovative performance based standard for sampling and monitoring stacks and vents and concurs that a small number of existing sources may benefit from upgrading to meet this standard. In those instances, EPA encourages DOE to make the necessary changes to ensure further safety and protection for our health and the natural environment. EPA is considering pursuing an MOU with DOE which would provide appropriate language specific to the needs for these existing sources which should be upgraded to meet the ANSI/HPS N13.1-1999 standard.**

**As noted above, field data has not shown that there is a significant difference in sampling results between ANSI N13.1-1969 and ANSI/HPS N13.1-1999 systems. Similarly, no data has been provided to support a contention that existing systems in compliance with ANSI N13.1-1969 consistently underestimate emissions (or falsely show compliance). Data provided by some commentaries did, however, highlight instances where systems were discovered to be degraded. Based on these examples, EPA saw a need to ensure that all sampling systems are functioning as intended and designed. For ANSI/HPS N13.1-1999 systems, such assurance is provided by the inspection requirements in this standard. For ANSI N13.1-1969 systems, we determined that more stringent inspection requirements were needed to augment existing QA procedures. Therefore, 40 CFR Part 61 Appendix B Method 114 - Test Methods for Measuring Radionuclide Emissions from Stationary Sources shall now include under section 4. Quality Assurance Methods, section 4.7, requirements for specific components of the sampling system to be checked at least annually. This section is similar to, and based on, requirements outlined in ANSI/HPS N13.1-1999.**

**2.6.2** The amendment is unclear on the disposition of existing sampling systems that are not compliant with either version of ANSI N13.1, yet there may be significant existing source with existing systems that will not be evaluated against either version of the standard in a consistent manner across the country and the DOE complex (ANSI committee, docket number A-94-60, II-D-12)

**Response: According to section 61.93(b), existing systems that have a potential to emit greater than 1% of the standard must comply with ANSI N13.1-1969. Failure to do subjects such facilities to enforcement action by EPA. We have included more stringent inspections requirements to provide assurance that all existing systems function as intended and remain in compliance with Subpart H. These systems also can be upgraded to meet the ANSI/HPS N13.1-1999 standard since this standard is approved as an alternative methodology.**

**2.6.3** Where is the evidence that within a year or two DOE will have eliminated all stacks grandfathered under this proposed rulemaking? A "strong effort" at one facility (e.g., Rocky Flats Decommissioning) should not be counted in deciding whether existing facility stacks at another DOE site (which may be kept in operation for decades into the future) are being adequately monitored without upgrade. (ANSI committee, docket number A-94-60, II-D-12)

**Response: There are several sites currently undergoing clean-up that will likely not be subject to Subpart H in the future after decommissioning. Some of these facilities are the Weldon Spring Site, Maywood Interim Storage Site, Middlesex Sampling Plant, Niagara Falls Storage Site, Latty Avenue Properties, Wayne Site and the Colonie Site. In 1989, when radionuclide NESHAPs was promulgated, there were 40 DOE facilities subject to Subpart H. At present, there are 32 DOE facilities subject to Subpart H, a reduction since 1989, due to changes in the DOE mission. This trend is likely to continue. Nevertheless, we considered the commentator's concern that it may not be reasonable to assume that many stacks will be decommissioned in the future. Based on this concern and others, EPA re-examined its justification for "grandfathering" existing stacks. Even without considering the lifetime of a stack, EPA has determined that requiring upgrades of all subject existing stacks is not justified because of high costs and little demonstrated improvement in real-world performance.**

**We agree with the commentator that existing stacks should be monitored to ensure they perform as intended and continue to meet applicable ANSI (either 1969 or 1999) sampling requirements. Therefore, Appendix B Method 114, Quality Assurance Methods, has been updated to include section 4.7. This section states: "Regular maintenance, calibration and field checks shall be performed for sampling system in use by satisfying Table 2: Maintenance, Calibration and Field Check Requirements." Incorporation of this section into Appendix B Method 114 ensures components of the sampling systems are inspected at least on an annual basis to prevent clogging and possible misrepresentation of the sample. This table is based on "Table 5 - Summary of Maintenance, Calibration and Field Check Requirements" found in ANSI/HPS N13.1-1999.**

**2.6.4** Where the draft mentions (about the top of page 4) for "new facilities or those being significantly modified" it reads "The standard describes a low cost, low maintenance measurement system with superior performance and one that is easy to operate." That isn't necessarily so, even at new construction projects. The testing and sampling site qualification requirements could (and probably will) be comparatively expensive. (Oak Ridge, docket number A-94-60, II-D-17)

**Where continuous sampling systems do not already exist, we anticipate that the costs to design and install an ANSI/HPS N13.1-1999 compliant system would be comparable to the costs for a system to meet ANSI N13.1-1969 requirements. The situations thus present an opportunity to adopt and use more modern, performance-based sampling methods. EPA has determined that the requirement for new and upgraded stacks to comply with ANSI/HPS N13.1-1999 is therefore reasonable.**

## 2.7 Accidental Releases

Low probability, high consequence 'accident' events in DOE nuclear facility stacks are part of the motivation for the extraordinary efforts of the ANSI N13.1 committee to correct the serious deficiencies of the old standard's technology and methodology recommendations. EPA has gone on record as stating that DOE facilities do not have to design their monitoring systems in anticipation of 'accident' conditions. We believe this decision is implicitly reflected in the present proposed rulemaking that would allow DOE to continue to operate nuclear facility stacks that are monitored by systems designed against 30-year old standards, now known to be incapable of providing adequate performance in high risk stacks (Why would EPA not include loss of air pollution control accidents, which leaves some users with the impression that larger particles are of no concern? Also, in many conceivable accidents, there could be significant emissions of particulate matter that would not be sampled by ANSI N13.1-1969 apparatus, so should not EPA have a requirement to cover such situations?). (ANSI committee, A-94-60, IV-D-3)

**Response: The emissions limitations in Subparts H and I apply to all releases, whether incident to normal operations or accidental. Therefore, EPA examined whether certain facets of ANSI/HPS N13.1-1999 could help prevent or reduce accidental releases of radioactivity from regulated facilities. Oftentimes, accidental releases bypass control equipment; as a result, emissions may have particles sizes associated with the aerosol upstream of the control equipment, rather than that typically encountered downstream of control equipment. These larger particles can often be sampled more effectively using the shrouded probes encouraged by ANSI/HPS N13.1-1999. For these reasons, EPA evaluated the potential effects on accidental releases when using ANSI/HPS N13.1-1999.**

**To begin, EPA sought to characterize unplanned releases. There were 37 unplanned releases reported in the Subpart H reports from 1994-1997 and 1999. The average dose was 0.034 mrem. Only 1 unplanned release resulted in the dose being greater than 10% of the standard but not exceeding the standard. This was a tritium release that occurred at the Savannah River Site in 1995. Non-reactive gases such as tritium can be adequately sampled using either ANSI N13.1-1969 or ANSI/HPS N13.1-1999. Nineteen (51%) unplanned releases were thought to be a result of human error. Nine (24%) unplanned releases were considered a result of poor inspections. Two (5%) unplanned releases occurred outside of the stack and seven (19%) unplanned releases were not sufficiently described for classification (due to the release of sensitive information).**

**EPA concluded that utilizing ANSI/HPS N13.1-1999 rather than ANSI N13.1-1969 would not have reduced the occurrence of accidental releases due to human error, nor would it have affected releases outside the stack. Furthermore, doses from unplanned releases were so low (on average, almost 1000 times lower than the applicable standard) that even significant increases in sampled emissions, if found, would have minimal public health impact and be unlikely to affect radionuclide NESHAPs compliance.**

**EPA determined, however, that 24% of unplanned releases may not have occurred if more stringent inspection requirements, such as those in ANSI/HPS N13.1-1999, were required by Subparts H and I. Properly functioning sampling systems - as ensured by regular, rigorous inspections - can provide an early indication of an otherwise unapparent failure of emissions control equipment or other conditions contributing to unplanned releases. EPA determined, however, that other aspects of ANSI/HPS N13.1-1999 would not affect these kinds of unplanned releases; therefore, for existing sources, EPA believes it most reasonable and efficient to replicate only those portions of ANSI/HPS N13.1-1999 affecting inspections. To implement these inspection requirements as part of Subparts H and I, EPA has amended the Quality Assurance Methods in Appendix B, Method 114 - Test Methods for Measuring Radionuclides Emissions from Stationary Sources to include a table that describes when each component of the sampling system must be inspected. This table is based on a similar table found in ANSI/HPS N13.1-1999.**

## 2.8 General Clarification

**2.8.1** Section B of the Background section (Purpose of ANSI/HPS N13.1-1999), paragraph 2, 2nd sentence. This sentence should read: "Our review indicated that the difference between the two standards that could significantly impact the representativeness of the sample extracted was the requirement for multiple sampling nozzles and isokinetic sampling cited in ANSI N13.1-1969." (Oak Ridge, docket number A-94-60, II-D-17)

**Response: Yes. The second sentence in the second paragraph in the "Purpose of ANSI/HPS N13.1-1999" should have stated: "Our review indicated that the difference between the two standards that could significantly impact the representativeness of the sample extracted was the requirement for multiple sampling nozzles and isokinetic sampling cited in ANSI N13.1-1969."**

**2.8.2** In the actual regulatory amendment section for subpart H, Section 61.93 paragraph (b)(2)(i)(B), the first sentence ends with the following parenthetical phrase "...(including the guidance presented in appendix A or ANSI N13.1)..." Since we now have two ANSI standards cited in this regulation, this should be changed for clarification to the following: "...(including the guidance presented in appendix A or ANSI N13.1- 1969)..."? (Oak Ridge, docket number A-94-60, II-D-17)

**Response: Clarification has been made.**

**2.8.3** Any document should discuss its purpose. This in particular applies to regulatory documents. The statement in section A "Justification for the Proposal" is far from adequate. It does not address the fundamental purpose - the protection of human health.

Also, on page 29934 the proposal quotes from a new ANSI standard. It is unclear (without further background reading for which time does not permit) whether the new proposal is to urge the adoption of the new ANSI standard. If the plan is to adopt the new ANSI standard the proposal should say so, and say it unequivocally. If the proposal differs from the ANSI standard it should say so, and unequivocally. But it should be said in the form of a recommendation and not a requirement. I suggest "the use of the latest ANSI standard (and any revision of it) shall be deemed adequate evidence that the facility meets the requirements of this section." (R. Wilson, docket number A-94-60, II-D-16)

**Response: The purpose of the amendment is to incorporate the ANSI/HPS N13.1-1999 sampling methodology (FR 29934, May 9, 2000). The use of ANSI/HPS N13.1-1999 is allowed but not required for existing sources; it is required for new and modified sources. Recommending (rather than requiring) ANSI/HPS N13.1-1999 for new sources might not provide adequate incentive to ensure that updated sampling methods are being used at regulated facilities.**

**2.8.4** The standard "requires" or at least alludes to system testing. It needs to be defined exactly as to when testing is required. Further, the standard calls for tests or "challenges" for gas, aerosols, and particulates. We can't find where the standard tells exactly how such tests must be conducted or a reference on how to do them ... something equivalent to the Appendix A Methods 1 through 5; this should also be defined. (Oak Ridge, docket number A-94-60, II-D-17)

**Response: ANSI/HPS N13.1-1999 is a performance based standard rather than one based on prescriptive rules. For example, the concept of acquiring a representative sample is not based on rules for sample location and multi-point extraction, but rather on the premise that at any location where the contaminant concentration and the fluid momentum can both be demonstrated to meet numerical criteria for acceptable mixing, a representative sample can be obtained by extraction from a single point in that profile. Thus, the burden has been shifted from specifying the distance that a sampling location must be from a disturbance to demonstrating compliance with numerical criteria placed on mixing performance. For additional information on how to implement ANSI/HPS N13.1-1999, refer to "Methodology for Sampling Effluent Air From Stacks and Ducts of the Nuclear Industry" (LA-UR-96-2958) by Dr. Andrew R. McFarland, ESH-4. (Docket number A-94-60, V-B-18) The purpose of this manual is to present methodologies for achieving and**

**demonstrating compliance with the new approaches to sampling radionuclides from stack and ducts. This includes means for testing the uniformity of concentration and velocity profiles; methods for design of effective sampling systems; techniques for measurement of the flow rate in sampling systems and, through stacks and ducts; and, quality assurance requirements.**

**2.8.5** The assertion that the single-point sampling approach is "drastically" different from the multi-point isokinetic approach of the 1969 version of N13.1 is incorrect and results in part from a common misunderstanding of the earlier version. On the contrary, the 1969 version states that single point sampling is justified if contaminant distribution is shown to be uniform. The recommendation of multi-point sampling was "to further insure that the sample represents the average composition." ANSI/HPS N13.1-1999 finally provides a rationale and methodology to ensure that single point sampling is justified, and provides certain explicit quantifiable performance criteria to be met when the method is applied as opposed to the qualitative, "rules of thumb" characteristic of the old standard. (ANSI committee, docket number A-94-60, II-D-12)

**Response: EPA acknowledges that the ANSI N13.1-1969 standard does not necessarily require multiple point sampling. We appreciate that ANSI N13.1-1969 gives greater flexibility than is generally acknowledged, which should be helpful to ensure existing systems can address sampling needs.**

## 3. COMMENTS REGARDING AMENDING OTHER PARTS OF SUBPART H

**3.1(a)** The proposed amendments are limited to stack sampling requirements. Changes should also be made to other parts of the rule. One significant method of compliance demonstration by DOE facilities is stated only in the EPA and DOE memorandum of understanding of 1995. It is the method stated in Appendices D and E of 40 CFR 61. This method of compliance demonstration should be stated in the regulation. (LLNL and ANSI committee, DOE HQ, docket numbers A-94-60, II-D-18, II-D-12 and II-D-15, respectively)

**3.1(b)** An additional comment that addresses more than the stack sampling requirements is our position regarding the need for lower limits of applicability of the standard. Specifically, we suggest that any individual source that contributes less than 1X10-6 mrem/y effective dose equivalent (EDE) to the maximally exposed individual be exempt from the annual compliance demonstration requirements of NESHAPs. About two-thirds of the EDE from the nearly 200 emissions sources at LLNL range from 1X10-6 to 1X10-19 mrem/y. (LLNL, docket number A-94-60, II-D-18)

**3.1(c)** Section 61.93 (b)(1)(i)(A and B) refers only to Method 2 and 2A for measuring effluent flow. We suggest rewording these paragraphs to also allow the use of either Methods 2, 2A, 2C, and 2D, as applicable. (ANSI committee, docket number A-94-60, II-D-12)

**3.1(d)** It is my understanding that, after a lengthy exchange of memoranda, and numerous meetings, EPA reached agreement that the existing NRC dose rate limit for airborne releases from organizations licensed to use radioactive materials was acceptable. That dose rate limit (expressed in terms of effective dose) was 25 mrem/year including the proviso that it be applied in conjunction with the ALARA criterion. This agreement does not seem to be reflected in this proposed rule. (R. Wilson, docket number A-94-60, II-D-16)

**3.1(e)** The new regulation for DOE facilities could well be a dose limit identical to that adopted by NRC for single facilities – 25 mrem/year- although 10 mrem/year could be a design goal. But it should be up to DOE to decide how to meet it. The EPA should not make demand on the particular way of meeting the goal. Any intervention by EPA on the details should be no more than suggestions. In particular, the demand that emissions from a particular stack be limited so that the calculated dose be 1% of 10 mrems per year (0.1 mrems per year) is too draconian. It does not allow for fluctuations. If there are 100 stacks, it is unlikely that more than 10 stacks (the square root of 100) will actually be emitting at the high level. Thus the 1% could be replaced by "1/(square root of the number of emitting stacks)." But it would be better for EPA to say nothing at all. (R. Wilson, docket number A-94-60, II-D-16)

**3.1(f)** There is an important and increasing realization that performance based regulation and risk based regulation are superior to prescriptive regulation. Thus after a regulation to keep doses at site boundary to less than 10 mrem per year (or better 25 mrems per year) has been promulgated it should be open to the entity being regulated on how to meet it. Prescription by EPA is

unnecessary at best and usually counterproductive. This proposal in particular is mostly prescriptive regulation and as such is outdated and must be reconsidered. (R. Wilson, docket number A-94-60, II-D-16)

**3.1(g)** Specific suggested changes in the proposed rule:

(a) EPA should ensure that the proposed "effective dose equivalent" (10 mrem per year) discussed at the bottom of FR page 29934 middle column is consistent with NRC policy, guidelines and regulations AND STATE THAT IT IS CONSISTENT. If it is not consistent, the proposed EPA rule should be modified.

(b) The method of meeting this requirement should not be mandated. It should be up to DOE to decide how to meet the criterion, and to provide evidence to EPA that it is being met.

(c) If (6b) is not followed, continuous monitoring of releases mandated on page 29935 middle column (last paragraph in small print) should be changed to demand continuous monitoring ONLY for stacks or ducts that are estimated to give an off site radiation dose of greater than 5 mrem per year, and allow estimation for all other stacks or ducts. ( R. Wilson, docket number A-94-60, II-D-16)

**3.1(h)** According to reliable estimates from NRC, the nuclear fuel cycle (which includes DOE facilities) only produces a dose to the average American of 0.05 millirems compared to a total natural background of 300 millirems equivalent. Natural background is 6000 times as great (on average) as the radiation that the proposed regulation would address. Any new regulation must be justified against these simple facts.

Also, there is an unproven postulate that the effects of radiation on people are linear at low doses. This has led to a recommendation that doses be reduced to a level As Low As Reasonably Achievable (ALARA). The Nuclear Regulatory Commission in a 2 year long public hearing discussed what this means in practice and came up with a recommendation that doses be reduced if they can be done for a sum of $1,000 per man-rem now updated for inflation (and corrected for political correctness) to $20 per person Sievert. This should be the standard against which any regulation must be compared. If an entity can (and does) emit radiation or radionuclides which can be reduced, then a regulation can force him to spend that money. Conversely, if a regulation demands a higher cost than this it should be changed. (R. Wilson, docket number A-94-60, II-D-16)

**Response to 3.1 (a) - (h): EPA proposed to amend Subparts H and I only to include the ANSI/HPS N13.1-1999 standard. The scope of the amendment did not extend to other issues. The dose limits are the result of extensive EPA review. EPA believes that sources have considerable latitude in the methods they use to meet the dose standard.**

**3.2** Section 61.97 states that facilities are to be exempt from the reporting requirements of 40CFR61.10. Does this mean the exemption is extended to non-nuclear sources in a nuclear facility? (ANSI committee, docket number A-94-60, II-D-12)

**Response: Section 61.97, "Exemption from the reporting and testing requirements of 40 CFR 61.10," applies to all sources that are subject to Subpart H.**

**3.3(a)** Neutrons - For several of the Department of Energy facilities, the public can receive a dose from neutrons emitted within the facility. Although neutrons are not "radionuclides" as prescribed by the regulation, we believe it is important to clarify in the revision to Subpart H how direct radiation released from the facility is to be addressed with regard to public exposures. (Regional Association of Concerned Environmentalists (RACE), Nuclear Watch, New Mexico, Rocky Mountain Peace and Justice Center, Concerned Citizens for Nuclear Safety (CCNS), Risk Assessment Corporation (Dr. Till), Heart of America, Northwest, docket numbers A-94-60, IV-D-32, IV-D-29, IV-D-30, IV-D-27, IV-D-27, IV-D-35, respectively)

**3.3(b)** In addition to free neutrons as opposed to radionuclides, it may be worthwhile to add free alpha particles and free beta particles as well as free gamma radiation and any other sub-atomic radiation, e.g., muons, pions, etc. as opposed to simply radionuclides. A precedent for including neutrons is given in 40 CFR 61.190, "National Emission Standards for Radon Emissions from Department of Energy Facilities" and also in 40 CFR 61.191, Appendix B of "Environmental Radiation Protection Standards for Management and Disposal of Spent Nuclear Fuel, High-Level and Transuranic Radioactive Wastes." The importance of including neutrons, rather than merely radionuclides, is seen in the possibility of hazardous "concentrations" of neutrons existing away from a nuclide in such instances as criticalities, both planned as in critical assemblies, and in unplanned events such as accidental nuclear excursions. (NMED DOE Oversight Bureau, docket number A-94-60, IV-E-2)

**Response for all of 3.3: The scope of the amendment did not extend to issues other than incorporation of ANSI/HPS N13.1-1999. However, Section 112(b) of the CAA does not include neutrons as a listed hazardous air pollutant. To date, EPA has not exercised its authority under Section 112(b)(2) of the CAA to list neutrons as a hazardous air pollutant nor has it been presented with a petition under Section 112(b)(3) to modify the list of hazardous air pollutants by adding neutrons. Therefore, neutrons emissions are not currently regulated under a national emission standard.**

**3.4** Transient receptors on public areas within Department of Energy Facilities EPA should clarify whether or not members of the public who use public roads within DOE facilities should be included in the dose calculation for compliance with 40 CFR 61, Subpart H. It is possible that a member of the public could be exposed to dose levels above 10 mrem while using public areas as

a result of an episodic release of radionuclides at the facility. Most of the DOE sites have roads that are used by the public for transport across the site. It is also possible (as we described in our questions submitted to EPA in 1998) that a member of the public could use these roads for biking or running. Your response to our question previously indicated DOE facilities are to "calculate the highest effective dose equivalent to any member of the public at any offsite point where there is a residence, school, business, or office." It is certainly plausible that a member of the public could use publicly accessible roads and be exposed to greater than the 10 mrem dose limit. Although this scenario would likely not constitute routine exposures of this magnitude to any hypothetical individual, it is possible the dose limit could be exceeded in any given year. Therefore clarification of this issue of exposures to transient receptors would be advisable in the revision to Subpart H. (Regional Association of Concerned Environmentalists (RACE), Nuclear Watch, New Mexico, Rocky Mountain Peace and Justice Center, Concerned Citizens for Nuclear Safety (CCNS), Risk Assessment Corporation (Dr. Till), Heart of America, Northwest, docket numbers A-94-60, IV-D-32, IV-D-24, IV-D-30, IV-D-27, IV-D-27, IV-D-35, respectively)

**Response: The purpose of amending Subparts H and I is to update the sampling methodology to include the ANSI/HPS N13.1-1999 Standard. The scope of the amendment did not extend to other issues. EPA has evaluated this comment and responded in a separate letter. (Docket number A-94-60, IV-C-7)**

**3.5** Uncertainties in CAP-88 Some statement about how uncertainties are considered by EPA should be included in the revision to Subpart H. As you are aware, tools now exist for quantifying uncertainties in estimates of dose and risk. Theoretically, selecting input parameters that tend to make doses deliberately high (conservative) is one way to bypass the need for a quantitative uncertainty analysis. If this is EPA's approach to addressing uncertainties within CAP88, a statement to this effect should be included in the revision to Subpart H. Otherwise, some other statements should be given that guide facilities in dealing with questions about uncertainties related to 40 CFR 61 Subpart H. (Regional Association of Concerned Environmentalists (RACE), Nuclear Watch, New Mexico, Rocky Mountain Peace and Justice Center, Concerned Citizens for Nuclear Safety (CCNS), Risk Assessment Corporation (Dr. Till), Heart of America, Northwest, docket numbers A-94-60, IV-D-32, IV-D-24, IV-D-30, IV-D-27, IV-D-27, IV-D-35, respectively)

**Response: The purpose of amending Subparts H and I is to update the sampling methodology to include the ANSI/HPS N13.1-1999 Standard. The scope of the amendment did not extend to other issues. EPA has evaluated this comment and responded in a separate letter. (Docket number A-94-60, IV-C-7)**

**3.6** Complex terrain - The user manual states that the atmospheric dispersion model incorporated in CAP-88 is not adequate for DOE sites that have a complex terrain such as Los Alamos. The

revision to Subpart H should include some statement about this issue and how the facilities with complex terrain should model releases of radionuclides to air. One possible solution is to make a comparison between CAP-88 and a more sophisticated model that addresses complex terrain to be sure the CAP-88 dispersion model does not underestimate annual average air concentrations. This issue is probably not of concern at most DOE sites but it is certainly an important matter for Los Alamos. (Regional Association of Concerned Environmentalists (RACE), Nuclear Watch, New Mexico, Rocky Mountain Peace and Justice Center, Concerned Citizens for Nuclear Safety (CCNS), Risk Assessment Corporation (Dr. Till), Heart of America, Northwest, docket numbers A-94-60, IV-D-32, IV-D-24, IV-D-30, IV-D-27, IV-D-27, IV-D-35, respectively)

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**3.7** Currently, compliance of radionuclide releases with the 10 mrem/year limit is assessed by assuming that the releases in a given year are evenly distributed over the year. In many cases, this assumption is far from reality. In effect, releases from many DOE sites are short-term in nature. Exposures to specific downwind receptors are likely to be larger if a given release occurs over a short time period if the receptors happen to be present during such releases. Hence, if this effect is taken into account, exposures to some members of the public may be severely underestimated. The CAP-88 user manual clearly states that the model should not be used for short-term releases. If it is scientifically improper to use CAP-88 for such releases, Subpart H should not demand the improper use of the model. Instead, proper alternative models should be provided. (Regional Association of Concerned Environmentalists (RACE), Nuclear Watch, New Mexico, Rocky Mountain Peace and Justice Center, Concerned Citizens for Nuclear Safety (CCNS), Risk Assessment Corporation (Dr. Till), Heart of America, Northwest, docket numbers A-94-60, IV-D-32, IV-D-24, IV-D-30, IV-D-27, IV-D-27, IV-D-35, respectively)

**Response: The purpose of amending Subparts H and I is to update the sampling methodology to include the ANSI/HPS N13.1-1999 Standard. The scope of the amendment did not extend to other issues. EPA has evaluated this comment and responded in a separate letter. (Docket number A-94-60, IV-C-7)**

**3.8** Why would EPA allow remotely located ambient samplers to estimate emissions from stacks and ducts of the nuclear industry when, ostensibly for good scientific reasons, it does not afford other industries the same opportunity? (ANSI committee, docket number A-94-60, IV-D-3)

**Response: The purpose of amending Subparts H and I is to update the sampling methodology to include the ANSI/HPS N13.1-1999 Standard. The scope of the amendment did not extend to other issues.**