Statement of the U. S. Department of Energy on the Environmental Protection Agency's Proposed Amendments to the National Emission Standards for Hazardous Air Pollutants (NESHAPs), 40 CFR Part 61, Subpart H

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Summary:

The Department of Energy supports EPA's proposed modifications to 40 CFR Part 61, Subpart H[1]. We believe that the adoption of the ANSI N13.1 standard will result in improvements in the techniques currently employed to monitor airborne emissions from DOE facilities. However, we also support the Environmental Protection Agency's proposal to make the modifications for compliance with the ANSI standard apply primarily to new or modified facilities rather than require complete retrofitting of all DOE facilities. The complete retrofitting and replacement of all existing emission monitoring devices at DOE facilities would not result in any tangible public health benefit nor would it be cost-effective. This is especially true for facilities whose operating lifetime will be short because they are scheduled for shutdown, decontamination and decommissioning.

Background:

The Department of Energy has supported the development of the shrouded probe sampler[2] and the American National Standards Institute standard ANSI-N13.1-1999. The Department provided information to and championed an agreement with the Environmental Protection Agency to have the shrouded probe sampler accepted as an alternative sampling methodology under 40 CFR Part 61[3]. Without EPA acceptance of the shrouded probe methodology, 40 CFR

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[1] U.S. Environmental Protection Agency, "National Emission Standards for Hazardous Air Pollutants; Standard for Emission of Radionuclides Other Than Radon from Department of Energy Facilities; Standard for Radionuclide Emissions from Federal Facilities Other Than Nuclear Regulatory Commission Licenses and Not Covered by Subpart H; Proposed Rule," Federal Register of May 9, 2000 (65 FR 29934).

[2] A. R. McFarland, C. A. Ortiz, M. E. Moore, R.E. DeOtte, Jr. and S. Somasundaram, "A Shrouded Aerosol Sampling Probe, " *Env. Sci. Techn.* **28** (12): 1487-1492 (1989).

[3] This is mentioned in the quote from the paper by Rodgers et al. that appears in the EPA Federal Register Notice pp. 29935-29936.

Part 61 could not be modified to adopt the ANSI N13.1-1999 standard.

DOE Position:

DOE believes that the revised ANSI methodology has demonstrated improved efficiency in the sampling of particulates over previous methodology and we want to commend the ANSI committee for their efforts in bringing the ANSI N13.1 standard up to date. It is a fine technical tool but it requires sound management decisions to make its use effective. The ANSI methodology is for measurement, not control, of airborne effluents[4]. This means that employing the ANSI methodology does not result in any direct reduction of emissions, reduction of risk, or other improvement in public health. This should be kept in mind when identifying data quality objectives and considering the cost/benefit aspects and priorities for upgrading monitoring capabilities.

The Department has worked with the Environmental Protection Agency on the adoption of improved monitoring components included in the ANSI N13.1 -1999 standard such as the shrouded probe sampling methodology even while ANSI N13.1-1999 was still in draft. In 1993, the Department submitted a package of information to EPA[5] with a request that the shrouded probe sampler be approved by EPA as an acceptable alternative monitoring method. This approval was granted conditionally on November 21, 1994[6]. The Department of Energy also submitted a report to EPA entitled, "Proposed Implementation of ANSI N13.1-1999 at the Department of Energy[7]," a portion of which is quoted in the EPA Notice of Proposed Rulemaking[1]:

> ANSI N13.1-1999 appears to be appropriate for stack sampling and monitoring of radioactive emissions at new DOE facilities and at facilities that are undergoing significant modifications to ventilation systems. The standard describes a low cost, low maintenance measurement system, with superior performance and one that is easy to operate. It is the preferred system to install in new facilities. However, in existing DOE facilities, many require modifications that are difficult and costly. The single-point sampling approach is drastically different from the isokinetic multi-probe sampling approach utilized in existing stack monitoring systems that are in compliance with ANSI-N13.1-1969. Upgrades to the new ANSI require the complete

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[4] This has been acknowledged by several members of the ANSI N13.1 committee in their comments submitted for this rulemaking:: J. Glissmeyer, J. Rodgers, A. McFarland, and M.D. Hoover, "Comments on EPA's Proposed Amendments to 40 CFR Part 61, Subpart H and I," Docket A-94-60, June 8,2000, p. 1

[5] Letter with enclosures to J. William Gunter, Director, Criteria and Standards Division, Office of Radiation Programs, U.S. Environmental Protection Agency, from Raymond F. Pelletier, Director, Office of Environmental Guidance, U.S. Department of Energy, dated August 26, 1993.

[6] Letter to Raymond Pelletier, DOE, from Mary D. Nichols, EPA Assistant Administrator for Air and Radiation.

[7] EPA Docket A-94-60, Item II-D-6, June 1999.

removal of existing systems, with the new systems requiring substantial testing of stack flow characteristics and extensive retrofitting and rework of the stack.

DOE's position is that, although the new ANSI 13.1-1999 methodology is an improvement to the previous standard, this is not a sufficient reason for wholesale expenditure of funds to replace existing samplers and sampling lines at all facilities and for all discharge points. There are DOE facilities and effluent streams where the improved sampling procedures would be warranted, but for less critical stacks and vents the existing sampling is adequate to show compliance with the limit for airborne radionuclide emissions under the National Emission Standards for Hazardous Air Pollutants (NESHAPS). It should be noted that the shrouded probe sampler has already been or is being installed at a number of DOE facilities.

The determining factors that would be used by DOE in the selection or replacement of airborne effluent sampling devices at DOE facilities should be:

1. Type of emission (gas, particulate, tritium, etc.),
2. Emission levels,
3. Relative contribution of given release point to total releases from the facility,
4. Quality and adequacy of existing systems and instrumentation,
5. Engineering impacts, and
6. Overall costs.

1. Type of Emission.

The primary improvements offered by the ANSI N13.1 methodology are related to particulate capture and their transmission to the filter collector. Although many DOE facilities can benefit from these improvements, it should be noted that the DOE facilities having the highest individual doses reportable under 40 CFR Part 61, Subpart H , (Los Alamos National Laboratory, Oak Ridge National Laboratory and the National Renewable Energy Laboratory) primarily emit activation gases and tritium, not particulates. Consequently, the benefit of replacing samplers and sampling lines to meet ANSI N13.1-1999 at these facilities is diminished as any improvements in sampling particulates will have little effect on the estimated radiation dose from these facilities.

2. Emission Levels.

A principal factor to be evaluated when considering whether to replace existing monitoring equipment is the magnitude of the emissions being monitored. Section 61.93 of 40 CFR Part 61, Subpart H, requires monitoring of stacks and vents with the potential to release emissions that could cause doses in excess of 1 % of the NESHAPS 10-millirem/year standard without consideration of existing control measures (such as high-efficiency particulate air filters). This is an extremely low dose of 0.1 millirem/year (which is one one-thousandth of the DOE and NRC 100-millirem dose limit[8] for protection of the members of the public. Because of this use of

[8] This is also the limit recommended by the National Council on Radiation Protection and Measurements (NCRP) and the International Commission on Radiological Protection (ICRP) for protection of members of the general public.

potential rather than actual emissions, there are a large number of stacks and vents at DOE facilities that are required to be monitored. There would be substantial costs entailed if all of these stacks and vents required upgrading to comply with ANSI N13.1-1999 and there would be no commensurate benefit to public protection. Based on current monitoring systems and through confirmation using environmental surveillance we know the emissions are very small. The data provided as a result of an upgrade to ANSI-N13.1-1999 will merely permit us to state, with more precision that emissions are very small.

Because this monitoring requirement is a factor of one hundred below the NESHAPS limit, at these levels compliance with the NESHAPS limit can be demonstrated without a very precise determination of the actual dose. Therefore, DOE facilities that have shown by past emissions that they are well below the 10-mrem NESHAPS limit should not be required to modify their sampling systems. The previously demonstrated low emission levels should suffice to assure that additional monitoring upgrades are not needed. The ANSI standard itself would not require continuous sampling below the EPA monitoring threshold[9] and states (p. 15, § 4.2.2):

> Stacks that have the potential for release of radionuclides to the air in quantities that would contribute less than a small percentage of the regulatory dose limits would typically require only periodic confirmatory measurements.

3. <u>Relative contribution of given release point to total facility releases</u>.
As noted above, many of the monitored release points at DOE facilities contribute very little to the doses received from the facility. In a time of constrained resources, it is important to allocate them to achieve the best utilization. A complete overhaul of airborne emissions monitoring equipment at DOE facilities without regard to magnitude of potential emissions, doses and the remaining operating time of the facility could waste scarce resources. It should be noted that there are other radionuclide emission pathways into surface waters and ground water that also require upgraded monitoring and compete for funds with the airborne emissions monitoring. A misaligned focus on just one exposure pathway (air) would not provide balanced protection.

4. <u>Quality and adequacy of existing systems and instrumentation</u>.
DOE and its predecessor agencies were largely responsible for developing the monitoring techniques currently used for measuring airborne radionuclide emissions. Current DOE monitoring systems generally conform to the previous ANSI standard, N13.1-1969, which has been in use over a period of 30 years. Systems conforming to the older (1969) standard would still be adequate in most circumstances. To require a complete replacement of all sampling heads, transmission lines and collection system just because improved technology is available would be a potential waste of the taxpayer's money and a misallocation of resources.

5. <u>Engineering and health impacts</u>.
Replacement of sampling heads and lines may require penetration of stacks and exhaust ducts that contain radioactive materials. Although proper anti-contamination clothing can provide a barrier,

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[9] Table 2, page 16, of the ANSI N13.1-1999 standard.

the sampler upgrade operation can be a source of personnel contamination, particularly if there are sharp sheet metal edges from ducts. In some instances, the sampling heads may be located at near the top of a tall discharge stack. In these cases, upgrade of the sampler may entail additional physical risks.

6. <u>Overall costs</u>.
In general, we support EPA's proposal to apply the new standard to new and modified stacks. As we noted in these and previous comments, there is not commensurate benefit to the cost associated with applying the standard to existing stacks which we know have low potential for public dose under normal operations. The costs can be significant. We did a preliminary review of over 400 stacks which may have to be modified if ANSI-N13.1-1999 were applied to them. The cost per stack was typically slightly more than $300,000, although the estimates spanned from about $600,000 to 50,000 per stack with one estimate as high as $2.5 million. Total conversion of all stacks requiring continuous monitoring to ANSI-N13.1-1999 could result in costs just for DOE facilities on the order of $100 million.

Give that potential doses from DOE sites are typically on the order of 0.1 mrem per year or much less (dose from all stacks at a site combined), the cost of modifying these stacks cannot be justified. For those few sites that exceed 0.1 mrem, the doses are typically associated with conservative estimates from diffuse emissions rather than point sources or are the result of noble gas or tritium emissions. We do not see great benefits in N13.1-1999 methods over N13.1-1969 methods for these situations.

Non-routine Effluents.

It has been suggested that the new ANSI-N13.1 improves the measurement of accidental releases. In minor accidents where large aerosol particles are released by filter failures or similar events, the shrouded probe may have advantages over the multi-probe sampler. However, in more serious accidents initiated by fires, explosions, tornados, etc., it is unlikely that the normal effluent release pathway or sampling system would remain intact. In such cases, the effluents could completely by-pass the effluent monitoring system and whether there was a multi-probe or shrouded probe sampler would be immaterial. Environmental monitoring might have to be resorted to quantify the release in these cases.

In any case, the requirements in 40 CFR Part 61 are not well suited to assessing doses associated with accidental releases. The required code, CAP-88, is primarily for chronic dose assessment not accidental releases. In general, unplanned releases are assessed under DOE requirements using a combination of available effluent monitoring data and environmental surveillance data.

Assessment of Potential Dose with No Controls.

Currently, 10 CFR Part 61.93 requires continuous monitoring of any stack that has the potential to cause a dose of more than 1% of the standard and all radionuclides that can contribute 10% of that dose. The new ANSI N13.1 suggests a similar approach for defining sampling needs. Over the years of implementing the Subpart H standard, the Department has developed some concerns

relating to this approach for developing monitoring requirements and design. These are centered around the assumption that a facility operates with no emission controls in place for the entire year.

The result of this assumption is to emphasize radionuclides that are of little or no concern under normal operating conditions. HEPA filters and other systems are very effective controls of all but gases and the very smallest of particles. Hence, most radionculide particulates are removed in normal opertations and the primary radionuclides of concern for many DOE stacks are noble gases and tritium. In some stacks, if one assumes that the controls are removed, the primary radionuclides of concern become those that are normally stopped by the control system. In some cases, this could result in a monitoring system designed primarily to measure secondary radionuclides that would not even have to be measured during normal operations. In DOE's case, DOE's internal requirements require these be monitored so there is no real impact on the monitoring system. However, DOE recommends EPA reconsider the use of the "no controls" criteria for establishing monitoring needs.