



Risk Reduction & Environmental Stewardship Division

Meteorology & Air Quality Group

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Date: March 20, 2003

Refer to: RRES-MAQ:03-060

Mr. George Brozowski
1445 Ross Avenue (6PDT)
Suite 1200
Dallas, TX 75202

PROTOCOL STATEMENT FOR IMPLEMENTATION OF THE REVISED RAD-NESHAPS AT LOS ALAMOS NATIONAL LABORATORY

Dear George:

The attached protocol statement covers the implementation of the 2002 revision to 40 CFR 61, Subpart H at Los Alamos National Laboratory (LANL). This revision to Subpart H went into effect January 1, 2003.

The protocol described in the attachment is consistent with discussions that we have had on October 4, 2002, and February 25-27, 2003. The following areas are addressed:

- A. Graded approach for sampling and monitoring point sources of airborne emissions of radioactive material.
- B. Continuation of analysis methods approved in the 1996 FFCA between EPA Region 6 and DOE/LANL.

There are two additional attachments:

Attachment 1: Applicability of Maintenance & Inspection Requirements to LANL Sources

Attachment 2: Quality Assurance Documentation for the Rad-NESHAP Project at LANL

LANL will conduct operations in accordance with this protocol and with the quality program described in Attachment 2. If there is disagreement by the EPA Region 6, or if there are further comments or questions, please contact me at (505) 665-3850, at your earliest convenience.

Sincerely,

David Fuehne
Project Leader, Rad-NESHAP Compliance

Mr. George Brozowski
RRES-MAQ:03-060

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March 20, 2003

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Rad-NESHAPs File – Position Papers
RRES-MAQ File

A. Graded approach for sampling and monitoring point sources of airborne emissions of radioactive material

Reference: ANSI N13.1-1999, incorporated by reference into 40 CFR 61, Subpart H. Section 4.2.2 of ANSI N13.1-1999 states:

*A graded approach to establishing a sampling and monitoring program should be undertaken.
... There is no one graded approach that would be appropriate for all facilities.*

The revised ANSI standard for sampling and monitoring radionuclide emissions from stacks and ducts, incorporated by reference in the Rad-NESHAP regulation, is ANSI N13.1-1999. This standard went into effect as part of Rad-NESHAP regulations on January 1, 2003, and is applicable to new or modified sources.

One aspect of an emissions measurement program recommended in the 1999 ANSI is a graded approach to stack sampling. The standard suggests categorizing each emissions source into one of four “potential impact categories (PIC),” which define stack monitoring requirements, maintenance and inspection requirements, and other actions. The intent is to focus more resources of the Rad-NESHAP program on stacks that have a greater impact on the public. While an example of a graded approach for point sources is provided in the ANSI N13.1-1999, the standard recognizes that no one approach is appropriate for all facilities. Individual agreements between Subpart H facilities and regional EPA offices are therefore encouraged.

LANL’s Rad-NESHAP program has incorporated a similar graded approach since 1999. In the LANL program, all release points are assigned a “Tier” level, which corresponds to the PIC level described above. Tier I sources have the highest actual emissions, and Tier IV the lowest potential emissions. At higher emissions levels, stack monitoring is required, and inspection and maintenance requirements increase, as do quality assurance requirements.

The top two categories (PIC 1 and 2, or Tier I and II) are “major” stacks according to EPA terminology. The lower categories (PIC 3 and 4, Tier III and IV) are “minor” sources under EPA terminology.

Table 1 details the graded approach used by LANL.

Table 1: Graded Approach to Point Source Sampling and Monitoring Used at LANL

Tier I sources	<p>Stacks designated Tier I are those sources that have actual emissions that contribute greater than 1 millirem per year to any member of the public (as defined in Subpart H), based on the previous rolling 12-month period.</p> <ul style="list-style-type: none">a) Continuous sampling or monitoring of radionuclide emissions is required for all radionuclides contributing 90% or more of the potential off-site dose.b) Real-time monitoring with alarm capability for all types of emissions contributing to the “Tier I” status.c) Consideration will be given to a special accident monitoring system.d) Inspection and maintenance criteria for sample systems: all criteria from Table 5 of the ANSI N13.1-1999 standard, as applicable to the LANL instrumentation and the Tier I (or PIC 1) category. Applicability is determined from guidance in the ANSI standard. These inspections and maintenance activities are detailed in Attachment 1 to this document.e) An emissions management plan and source-specific procedures will be in place to address elevated emissions from each facility and identify required approvals and notifications prior to operations.f) All Tier II requirements also apply to Tier I stacks.
Tier II sources	<p>Stacks designated Tier II are those sources that have the potential to contribute greater than 0.1 millirem per year to any member of the public (as defined in Subpart H), based on the most recent Radioactive Materials Usage Survey.</p> <ul style="list-style-type: none">a) Continuous sampling or monitoring of radionuclide emissions is required for all radionuclides contributing 90% or more of the potential off-site dose.b) Inspection and maintenance criteria for sample systems: all criteria from Table 5 of the ANSI N13.1-1999 standard, as applicable to the LANL instrumentation and the Tier II (or PIC 2) category. Applicability is determined from guidance in the ANSI standard. These inspections and maintenance activities are detailed in Attachment 1 to this document.c) Analysis of operations for the Radioactive Materials Usage Survey shall meet the record-keeping requirements of Tier IV sources, described below.

Continued next page

**Table 1: Graded Approach to Point Source Sampling and Monitoring Used at LANL,
continued**

<p>Tier III Sources</p>	<p>Stacks designated Tier III are those sources that have the potential to contribute between 0.001 and 0.1 millirem per year to any member of the public (as defined in Subpart H), based on the most recent Radioactive Materials Usage Survey.</p> <ul style="list-style-type: none"> a) Potential emissions from Tier III sources will be evaluated annually by analysis of operations, as part of the Radioactive Materials Usage Survey (RMUS). b) For processes and radionuclides which contribute to the Tier III status of the source (over 0.001 millirem per year) or make up over 90% of the potential dose, information used to confirm and verify the level of emissions shall be traceable to a secondary source of documentation (e.g., stack monitoring data, operations logbook, database, etc.). This information will be subject to quality assurance review by a knowledgeable party prior to its use in the RMUS.
<p>Tier IV Sources</p>	<p>Stacks designated Tier IV are those sources that have the potential to contribute less than 0.001 millirem per year to any member of the public (as defined in Subpart H), according to the most recent Radioactive Materials Usage Survey.</p> <ul style="list-style-type: none"> a) Potential emissions from Tier IV sources will be evaluated at least every other year by analysis of operations, as part of the Radioactive Materials Usage Survey (RMUS). b) Information used to confirm and verify the level of emissions may be based on user estimates or other estimation methods that DO NOT need to be traceable to a secondary source of documentation. User estimates of radionuclide usage will be conservative upper-bound values.

B. Continuation of analysis methods approved in the 1996 FFCA between EPA Region 6 and DOE/LANL

Reference 1: 1996 Federal Facility Compliance Agreement between the U. S. EPA Region 6 and DOE Los Alamos Area Office (now Los Alamos Site Office), Appendix A, "Compliance Plan"

Reference 2: March 27, 1997 letter from G. Thomas Todd of the DOE/Los Alamos Area Office to Dr. Allyn M. Davis of the EPA Region 6, stating completion of the FFCA compliance deliverables. [Reference document LAAMEP:3SF-007]

... Since the execution of the FFCA, we have used the technical methods contained in the FFCA as well as other EPA-approved methodology in compliance demonstration activities and reports, and will continue to do so.

The Federal Facility Compliance Agreement (FFCA) between the EPA Region 6 and DOE/LANL gave EPA approval for several methods in use at LANL for Rad-NESHAP compliance. While the schedule of compliance deliverables was completed in 1997, the EPA approvals for the methods described in the FFCA remain valid.

These approved methods include, among others:

- a) The use of the Radioactive Materials Usage Survey to meet requirements for periodic confirmatory measurements on non-monitored stacks.
- b) The use of ambient air monitoring to evaluate the contribution of diffuse (non-point) sources to the annual Rad-NESHAP dose and the 10 millirem standard.
- c) The use of the "enhanced rule" for determining physical state of a material at temperatures above 100 degrees Celsius, when performing Appendix D evaluations of potential emissions. Specifically, when a material with a boiling point of over 2000 degrees Celsius is heated to within 1000 degrees Celsius of this boiling point, the material will be treated as a gas with 100% release. If the material is not heated to within 1000 degrees of its boiling point, the physical state used for release fraction determination will be the actual physical state of the material at the operating temperature.

LANL will continue to use these FFCA methods, as well as other approved alternative methods, in compliance demonstration activities and reports.

Note that approvals for (a) and (b) above are also granted through the 1995 Memorandum of Understanding between the EPA and DOE Complex.

Attachment 1: Applicability of Maintenance & Inspection Requirements to LANL Sources

40 CFR 61, Appendix B, Method 114, Table 2: Maintenance, Calibration, and Field Check Requirements [same as Table 5 from ANSI N13.1-1999]		
Requirement	Frequency	Applicability to LANL Point Sources:^(a)
1. Cleaning of [<i>in-stack</i>] thermal anemometer elements. ^(b)	As required by application	In-stack thermal anemometers are not in use at LANL sources
2. Inspect [<i>in-stack</i>] pitot tubes for contaminant deposits. ^(b)	At least annually	Tier I sources only
3. Inspect [<i>in-stack</i>] pitot tube systems for leaks. ^(b)	At least annually	Tier I sources only
4. Inspect sharp-edged nozzles for damage.	At least annually or after maintenance that could cause damage	Tier I and Tier II sources
5. Check nozzles for alignment, presence of deposits, other potentially degrading factors.	Annually	Tier I and Tier II sources
6. Check transport lines of HEPA-filtered applications to determine if cleaning is required.	Annually	Tier I and Tier II sources
7. Clean transport lines (if needed): <ul style="list-style-type: none"> ● Visible deposits for HEPA-filtered applications. ● Surface density of 1 g/m² ^(c) 	As described at left	Tier I and Tier II sources
8. Inspect or test the sample transport system for leaks.	At least annually	Tier I (measure leak rate) and Tier II (inspect for leaks) sources
9. Check mass flow meters of sampling systems with a secondary or transfer standard.	At least quarterly	Tier I and Tier II sources, at which mass flow meters are in use
10. Check sampling flow rate through critical flow venturis. ^(d)	At the start of each sample period	Critical flow venturis are not in use at LANL sources
11. Inspect rotameters of sampling systems for presence of foreign matter.	At the start of each sample period	Tier I and Tier II sources
12. Check response of [<i>continuous-reading</i>] stack flow rate systems. ^(b)	Quarterly	Tier I sources only
13. Calibration of flow meters of sampling systems.	At least annually	Tier I and Tier II sources
14. Calibration of effluent flow measurement devices.	At least annually	Tier I and Tier II sources
15. Calibration of timing devices.	At least annually	Tier I and Tier II sources at which time interval devices are in use

Notes:

- a) "Applicability to LANL Point Sources" is determined by references in ANSI N13.1-1999, Table 5.
- b) In items 1, 2, 3, and 12, italicized terms in square brackets indicate clarification added by LANL, based on text references in ANSI N13.1-1999 Table 5. [*example*]
- c) In item 7, the surface density threshold is quoted as 1 gram per square meter in section 6.4.6; this threshold is quoted as 1 gram per cubic centimeter in Table 5 of the ANSI and in Table 2 of Appendix B, Method 114. LANL assumes that the 1 gram per square meter is the correct value, and that the other value is a typographical error, since surface density refers to an area, not a volume.
- d) Item 10 is not included in Table 2 of 40 CFR 61, Appendix B, Method 114; however, it is in Table 5 of ANSI N13.1-1999. It is included here for completeness.

Attachment 2: Quality Assurance Documentation for the Rad-NESHAP Project at LANL

This protocol will be implemented as part of the overall quality assurance program in the LANL Meteorology & Air Quality Group, Rad-NESHAP Project.

Other documents in this QA program are listed below. Note that the modification, addition, or deletion of these QA documents does not require modification of this protocol statement.

The “designator” for each document is the assigned document number. Typically, the designator is preceded by “MAQ-” to indicate the group of ownership. Note that some older procedures still have the header “ESH-17-” before their designator; this indicates the last change was before the group’s name transition from ESH-17 to RRES-MAQ.

For brevity in the table below, many procedures are included in a “series” of documents. For example, the designator “100-series” consists of 19 procedures with such designators as “MAQ-104,” “MAQ-126,” etc. Complete listing of all procedures and the current controlled copies can be obtained from the RRES-MAQ web site.

<http://www.lanl.gov/orgs/rres/maq/QA.htm>

Designator	Document Name
QMP	Quality Management Plan for the Meteorology & Air Quality Group (RRES-MAQ)
RN	Quality Assurance Project Plan for the Rad-NESHAP Compliance Project
AIRNET	Sampling and Analysis Plan for the Radiological Air Sampling Network (AIRNET)
000-series	General MAQ procedures; deficiency reporting, new employee orientation, etc.
100-series	Procedures related to stack sampling and emissions calculations
200-series	Procedures related to ambient air sampling and emissions calculations
500-series	Procedures related to dose calculations and reporting
600-series	Procedures related to emissions sampling, calculations, and reporting from TA-53 stacks