

**NEW MEXICO ENVIRONMENT DEPARTMENT'S
RESPONSE TO PUBLIC COMMENTS
ON THE CLASS 2 PERMIT MODIFICATION REQUEST**

Revise Volatile Organic Compound Monitoring Procedures

Introduction. The New Mexico Environment Department (NMED) is responding to comments it received from the public on the permit modification request (Modification) for the revision of Volatile Organic Compound Monitoring Procedures, dated September 10, 2015. NMED proposes to issue the permit pursuant to its authority under the New Mexico Hazardous Waste Act (HWA), NMSA 1978, §§ 74-4-1 to 74-1-14. On September 12, 2015 the Department of Energy Carlsbad Field Office and Nuclear Waste Partnership LLC (the Permittees) issued a public notice that the NMED would accept comments for 60 days, until November 11, 2015. November 11, 2015 was the Veterans Day Holiday. Therefore, NMED accepted comments until the following day, November 12, 2015. NMED carefully considered all the comments received. The comments and NMED's responses are included in two sections; General Comments and Specific Comments by Topic.

General Comments

1. Comment: I'm writing in support of the recent Class 2 Permit Modification Request submitted by the Department of Energy's Waste Isolation Pilot Plant regarding the Volatile Organic Compound (VOC) monitoring process. We especially appreciate the opportunities the community was given to make sure we understand these proposed changes. It is clear that these proposed changes do not reduce or diminish VOC sampling. In fact, these proposed modifications use higher technology sampling equipment, revise the risk calculation formula to one that makes more sense, and add monitoring of TCE to the list of chemical agents.

The proposed monitoring station move makes sense, since this program is designed for workers who work above ground. Furthermore, this permit change will make this move official- as WIPP has already been using this location since last year's radiological incident.

Thank you for the opportunity to comment on this Class 2 permit modification. I encourage the NMED to quickly approve these proposed changes.

Response: Comment noted.

2. Comment: As the host community of a nationally important project such as this, it is extremely important that we make our voice heard. Our subcommittee considers the PMR to be an improvement to the Hazardous Waste Facility Permit and recommends its approval. After an extensive review, it is apparent that the proposed changes do not reduce or diminish VOC sampling.

We appreciate WIPP's willingness to meet with us, to answer our questions and to consider our suggestions. We especially value the fact that the draft submitted to the state includes revisions,

based in part on our recommendation, that detail the fact that WIPP's underground workers are being protected from VOCs by several additional underground monitoring processes. This proposed modification adds one chemical agent, trichloroethylene (TCE), to the VOC target analyte list for VOC monitoring. No chemical agents are removed from the monitoring list.

The monitoring stations are being moved because the previous sampling stations (in the permit) pose additional risk due to the possibility of radiological contamination, and WIPP has already been using these new monitoring stations since last year's radiological release. WIPP used an air dispersion model to decide on the best location, and provided a good explanation of why it decided on this location.

Our subcommittee had several questions about the additional VOC monitoring taking place at the facility, which is now addressed in the draft permit. This particular VOC monitoring plan deals specifically with monitoring workers at the above-ground portion of the WIPP facility for potential chronic (over time) exposure. Workers in the WIPP underground are monitored for possible acute exposure through the permit, and all potential exposures (both chronic and acute) are additionally monitored through WIPP's industrial hygiene program.

This plan will involve switching to higher tech sampling equipment that is easier to use and less likely to develop leaks, meaning increased accuracy and precision in monitoring.

The proposal includes a revision to the formula WIPP uses for risk calculation, as associated with VOCs. The new formula is a better fit with other similar regulatory formulas, makes it easier to add additional analytes to the monitoring list in the future, simplifies reporting and, finally provides a better assessment of health impacts since it considers both the carcinogenic and non-carcinogenic effects of these compounds.

In conclusion, there is nothing in this permit that diminishes WIPP's VOC monitoring. Improved equipment, additional target chemicals and a better risk calculation formula will improve WIPP's ability to monitor and protect its workers. We encourage the NMED to approve this Class 2 PMR.

Response: Comment noted.

3. Comment: As a result of attending these meetings and discussing, in detail, the various aspects of the current permit modification for VOC sampling, I support the DOE and the contractor's request, in its entirety, to move underground repository sampling for VOCs to the surface as the current VOC sampling areas (denoted in the permit as VOC station A and VOC station B) are located in contaminated portions of the repository and, since the February 14, 2014 underground radiation release event, WIPP employees have been unable to sample in these areas.

In addition to the underground contamination issue, recent improvements in technology and instrumentation have made it possible to make surface sampling a reality as detection limits for VOCs at the PPT (parts per-trillion) level are readily achievable, thereby allowing for samples to be collected on the surface even though those samples have been further diluted by air traveling from the underground.

Additionally, I believe that the DOE/Contractor's request to move repository VOC sampling from the underground to the surface makes sense from both a worker protection point of view as well as a scientific feasibility point of view. Further, I believe that the basis for repository sampling for VOCs is to ensure that surface workers are not exposed to dangerous levels of VOCs. Therefore, by moving this sampling to the surface, the DOE/Contractor are now directly assessing the air that workers in close proximity to emissions from the WIPP underground exhaust shaft are located.

Additionally, if this request is approved as submitted, underground workers at WIPP will continue to be protected by two other monitoring programs – 1) disposal room VOC monitoring (which will occur once waste emplacement in the underground is restarted) and 2) WIPP Industrial Health monitoring which currently occurs prior to employees entering an area in the underground and continues to occur as long as personnel are working in underground areas. Therefore, for these reasons, I support the permit modification being submitted by the DOE/Contractor at the WIPP.

Thank you for the opportunity to voice my support of this permit modification request. Please let me know if you have any questions or need any additional information.

Response: Comment noted.

4. Comment: SRIC appreciates that the permittees provided a draft of the proposed request and that representatives of the permittees as well as NMED met with SRIC and other citizen group representatives on May 27, 2015. SRIC continues to believe that such pre-submittal meetings are useful and supports continuing that “standard” practice in the future.

Response: Comment noted.

5. Comment: Nevertheless, there are several topics in the request package that should not be approved because the proposed modifications are not protective of human health and the environment and are not properly class 2 requests.

Response: NMED has reviewed all of the topics presented in the Modification and has determined that all meet the requirements for a Class 2 Modification in accordance in 20.4.1.900 NMAC (incorporating 40 CFR 270.42, Appendix I, Item A.4, “General Permit Conditions, changes in the frequency of or procedures for monitoring, sampling, or maintenance activities by the permittee: b. “other changes...Class 2”). NMED respectfully disagrees that the modifications are not protective of human health and the environment. See responses for specific topics below.

6. Comment: The Permittee's compliance history and the poor safety performance of WIPP requires more stringent, not less protective, permit provisions. Moreover, the fundamental failures of the permittees, particularly Nuclear Waste Partnership (NWP), raise serious concerns about whether that company can safely operate the facility and comply with permit provisions.

Given this situation, NMED should deny many portions of the request. NMED should also require the permittees to have a public process to discuss comprehensively the provisions of the permit that they intend to modify in order to re-start operations at WIPP. The public process should include one or more public meetings, similar to pre-submittal meetings, and discuss what permit modifications are required, whether there should be multiple requests or one or two “mega” requests, and the proper classification for those requests. Such a process could result in a better use of public and NMED resources than the piecemeal, unilateral approach that is being pursued.

Response: NMED acknowledges the concern regarding the Permittees’ compliance history and safety performance. Though these factors were taken into consideration while evaluating the Modification, they are not the subjects of this Modification.

The regulations require that the Permittees hold public meetings for specific types of permit modifications. Moreover, the Permittees hold “pre-submittal” meetings for the public to attend prior to submitting permit modifications to NMED. Additionally, since the February 2014 events, the Permittees have held regular town hall public meetings to discuss all aspects of the recovery status. These public meetings are simulcast over the internet and interested persons may view the meeting and pose questions that can be answered in real time. Interested persons should attempt to utilize these town hall meetings to discuss future recovery activities at WIPP.

7. Comment: NMED must consider the permittees’ compliance history, including violations of the Hazardous Waste Act or any permit condition, and may deny any permit modification based on that history. 74-4-4.2.D(6) NMSA. In its Administrative Orders of February 27, 2014; May 12, 2014; May 20, 2014; and the Compliance Order of December 6, 2014, NMED established that the permittees had violated multiple permit provisions over months prior to the February 2014 fire and radiation release events. Such violations, which have not been remedied in the more than 21 months since that time, must be weighed heavily in consideration of any permit modification requests. Given that history and current practice of non-compliance, the permittees must fully justify any class 2 or 3 permit modification requests. In the absence of such justification, requests should be denied.

Response: As noted by the commenter, NMED is obligated to consider the compliance history over the lifetime of the Facility prior to any regulatory action. The Administrative Orders were issued by NMED to address Permit non-compliance due to the February 2014 events. This Modification remedies several non-compliances that were included as part of the Administrative Orders. Additionally, the Permittees have prepared and have acted upon corrective action plans for issues that were identified by the DOE Accident Investigation Board, the Defense Nuclear Facilities Safety Board, and other federal investigative agencies. NMED is fully aware of the Permittees compliance status and have determined that the Permittees have adequately justified this Modification as a Class 2.

8. Comment: NWP became the Management and Operating Contractor and a permittee on October 1, 2012. In the more than 37 months since then, the facility has operated for about 16 months. Because of the inadequate performance of NWP, the facility has not been receiving or disposing of waste for the past 21 months and will not do so for many months into the future.

Based on that record, the ability of NWP to safely operate the facility is in serious doubt. For the majority of its time as operating contractor, and perhaps for the entire timeframe, NWP has been in violation of multiple permit provisions. Thus, the capability of NWP to comply with permit requirements is seriously in question since it has not demonstrated that it can do so. Given NWP's inadequate safety performance and lack of compliance with permit provisions, NMED should not reduce the stringency of the permit, which, in essence, rewards the permittees for violations. Multiple topics of the modification package would reduce the stringency of the permit and reduce protection of public health and the environment. Thus, those requests should be denied.

Response: NMED has determined that the modifications do not reduce the stringency of the Permit and that the Permittees have justified the changes as necessary to continue to protect human health and the environment. Please also see response to comment 7.

9. Comment: The WIPP operating philosophy is incorporated into the permit: "Start Clean, Stay Clean" (Attachment G-1e(2)(b)). But that philosophy and practice have been violated and can never again be achieved because of the substantial contamination of thousands of feet of tunnels in the underground hazardous waste disposal unit. As NMED Secretary Flynn has correctly stated, the fire and radiation release and the contamination were never supposed to happen. That fundamental promise to the public and premise for the permit has been irreparably violated. WIPP can no longer fulfill the "Start Clean, Stay Clean" principle that is part of its essential mission, the basis for public trust, and a fundamental operating basis for the permit. Weakening permit requirements will make it even more likely that additional "events" will occur.

Moreover, because of the changes in operating philosophy and practice, many of the permit modification requests would "substantially alter the facility or its operations" and, thus, are class 3 requests. 20 NMAC 4.1.900 (incorporating 40 CFR 270.42(d)(2)(iii)).

Response: NMED has determined that the modifications do not reduce the stringency of the Permit and that the Permittees have justified the changes as necessary to continue to protect human health and the environment. Furthermore, NMED has determined that the modifications do not substantially alter the facility or its operations and are therefore properly identified as a Class 2 Modification. Please also see response to comment 5.

10. Comment: Pursuant to 20 NMAC 4.1.900 (incorporating 40 CFR 270.42(b)(6)(i)(B)) and its historic practices, NMED may deny class 2 modification requests. SRIC strongly believes that at least four of the topics must be denied because they would weaken the stringency of permit requirements and reduce protection of human health and the environment. Thus, the four changes would not meet the requirements of the Hazardous Waste Act to provide such protections.

Response: The commenter does not specify which four topics they believe would weaken the Permit requirements. Furthermore, NMED has determined that the modifications do not reduce the stringency of the Permit and that the Permittees have justified the changes as necessary to continue to protect human health and the environment. Also see response to comment 5.

11. Comment: The PMRs do not address the big picture at WIPP following the February 2014 truck fire and radiation and hazardous materials releases from exploding waste container(s) shipped from Los Alamos National Laboratory, which contaminated portions of the facility. The six PMRs cannot stand by themselves. The Permittees (Department of Energy (DOE) and Nuclear Waste Partnership (NWP)) must provide the public with information about the range of upcoming PMRs to address the February 2014 releases in order for us to provide informed comments about these proposed PMRs. Because WIPP cannot currently comply with its existing New Mexico Environment Department (NMED) hazardous waste permit, the Permittees have put forward this set of PMRs to revise the volatile organic compound (VOC) monitoring procedures. The PMRs must so state that Permittees are not in compliance with their permit.

Response: Please see NMED's response to comment 7.

12. Comment: A new "While WIPP is Not Emplacing Waste" section should be added in the permit. This section would include current operations that are outside the existing permit. The proposed section would also gather all the modifications made to the permit solely because of the February 2014 releases and contamination events. It would provide an easily referenced place for all modifications that would need to be restored/changed/deleted prior to a WIPP reopening.

For example, if the permit were modified to change the VOC monitoring location, as proposed by the Permittees, then the change would be placed in this new section. We understand the difficulties in monitoring VOCs in a contaminated facility, but once WIPP reopens, VOC monitoring should return to the current permit conditions.

Response: Comment noted. The Permittees' recovery plan provides the schedule for compliance, which NMED will verify prior to the commencement of waste emplacement operations. Disposal room VOC monitoring will be compliant before NMED conducts an inspection and approves the Facility for normal operations.

13. Comment: Beyond the PMRs, there are other outstanding fire prevention, safety and security issues at WIPP. CCNS requests that NMED review and take regulatory action about the concerns raised recently by the Defense Nuclear Facilities Safety Board (DNFSB) about leaks and other degraded conditions in key fire suppression equipment. CCNS questions why WIPP recovery operations are even taking place when key fire suppression equipment is not in operating condition. Given that there were two fires/explosions in February 2014; NMED must use its regulatory power to stop all recovery operations until fire suppression equipment is fully operational. Two recent DNFSB monthly reports reveal – and there are probably more examples, which NMED should explore.

In its July 2015 monthly report, the DNFSB raised outstanding concerns about "surface fire protection systems and equipment maintenance, such as leaks in fire water pump packing and in buried fire looping piping, ... [and] underground material conditions."

In its September 2015 most recent monthly report, the DNFSB raised concerns about the Waste Handling Building (WHB) Fire Suppression System (FSS) "operating in a degraded mode. This

resulted in a PISA declaration, followed by a positive Unreviewed Safety Question (USQ) on September 18.”

Response: These comments are outside the scope of this Modification. NMED does not have authority to act upon issues identified by federal investigative agencies. However, NMED has performed three RCRA facility inspections since the events of February 2014. No adverse conditions have been discovered during these site inspections or during the subsequent review of requested documentation. All above ground emergency equipment that is specifically listed in the Permit continues to be inspected as required. Please also see response to comment 7.

14. Comment: Finally, there are major problems with three of the proposed PMRs. They are Topics 2 (change the repository VOC monitoring locations), 5 (revise the method of determining compliance with the surface non-waste worker environmental performance standard for air emissions) and 6 (remove the minimum running annual average (RAA) mine ventilation exhaust rate). Each one would significantly reduce the protection of human health and the environment as compared with the requirements that have been in place since the permit was first issued in 1999.

Response: NMED respectfully disagrees. Also, NMED cannot fully address the commenter’s concern, because they did not identify why the modifications would reduce the protection of human health and the environment. Please also see response to comment 9.

Specific Comments by Topic

Topic 1 - Add trichloroethylene (TCE) to the VOC target analyte list for VOC monitoring

15. Comment: We agree that TCE should be included in the VOC target analyte list.

Response: Comment noted. TCE was required to be added as a target analyte by NMED Administrative Order dated May 12, 2014, and this target compound will be included in the final Permit.

16. Comment: We object to the values shown and removing the Concentrations of Concern

Response: The values for TCE in Tables 4.4.1 and 4.6.3.2 were calculated in the same manner as all other target compounds were calculated. NMED concurs with the Permittees that the carcinogenic Inhalation Unit Risk (IUR) and non-carcinogenic Reference Concentration (RfC) values shown in Table 4.6.2.3 reflect current EPA values with the exception of Chloroform which NMED has determined to be a typo graphical error contained in the Modification and has corrected the IUR for Chloroform to read 2.3×10^{-5} in Part 4, Table 4.6.2.3 of the final Permit.

Topic 2 - Change the repository VOC monitoring locations

17. Comment: The Permittees adequately justify, in the context of the overall PMR and related appendices, relocating the VOC monitoring locations for the Repository VOC Monitoring

Program (**RVMP**) from the underground to above ground locations, based upon updated air dispersion modeling reflecting current conditions. The maximally exposed non-waste surface workers continue to be those who are downwind of the exhaust shaft in Building 489.

Response: Comment noted.

18. Comment: The Permittees offer various descriptions throughout the PMR for a new VOC monitoring location (station VOC-C) near Building 489, but fail to adequately incorporate that language or description in the actual language of the permit text. Here are some examples:

- “Station VOC-C is proposed to be stationed at the west air intake of Building 489”
(top of page 9)
- “...modeling indicated that the best location to monitor is the air intake to Building 489” (middle of page 9)

However, the language proposed for inclusion in the Permit Attachment N, Section N-3a(1) reads:

Building 489 has been identified as the location of the maximum non-waste surface worker exposure. Air samples will be collected at the air intake for Building 489 (Figure N--1) to quantify VOCs in the ambient air.

Note that this does not state it will be at the west air intake, nor does it explicitly identify this location as station VOC-C, instead relying on a reference to a separate figure. The Permit language must be as precise as possible, and should state explicitly that station VOC-C is located at the west air intake of Building 489.

The situation is similar for new VOC monitoring location VOC-D. At the top of page 9, it says “Station VOC-D is proposed to be stationed at WQSP-4,” whereas the language proposed for Section N-3a(1) says *Background VOCs will be measured by sampling at groundwater pad WQSP-4 (Figure N-1)* without explicitly identifying this location as station VOC-D. This text description must also be as precise as for Station VOC-C, not relying on reference to a figure.

Furthermore, the depiction of the VOC monitoring locations on Figure N-1 is insufficient to clearly identify them without reference back to the text. Figure N-1 should be modified to explicitly identify Building 489 with a label in the enlarged box as the location for station VOC-C, and monitoring well WQSP-4 should be identified with a label in the lower right corner as the location for station VOC-D.

Response: NMED has included language in Attachment N, Section N-3a(1) that better describes the locations of stations VOC-C and VOC-D. NMED has determined that the figures included in the Modification are adequate and will be incorporated into the final Permit.

19. Comment: This modification should be denied. This request would eliminate the two underground VOC monitoring stations. The primary reason given to change the monitoring locations to the surface is because of the difficulty of VOC monitoring in the radiologically

contaminated underground, including because sampling equipment might be radiologically contaminated. That contamination merits increased surface and underground monitoring, not the elimination of the underground monitoring. This proposed change is totally contrary to 15 years of WIPP permit requirements, which provide for two underground sampling locations. That monitoring resulted in detection of VOC exposures in the underground in 2009 and increased protection for workers and the public. Eliminating underground VOC monitoring would significantly reduce protection of human health and the environment, so the modification should be denied.

Response: The WIPP facility implements two programs within the VOC monitoring plan, (1) The Repository VOC Monitoring Program (RVMP) and (2) the Disposal Room VOC Monitoring Program (DRVMP). The purpose of the RVMP since the Permit was first issued in 1999 was to monitor the highest impact receptor, or the non-waste surface worker. Changes to the repository monitoring program as proposed in this Modification will continue to monitor this receptor. The DRVMP will continue to be implemented, as stated in the Permit, once waste emplacement activities have commenced at WIPP. Other underground worker protection issues are implemented by the Mine Safety and Health Administration (MSHA) and the WIPP facility's Industrial Health program.

20. Comment: Further, the location on the surface that is assumed to have the highest concentration of VOCs is based on a computer model, and therefore is assumed. Thus the air dispersion is also assumed. DOE proposes to replace the original assumption of the amount of risk with a new assumption of the location of the risk. This is unacceptable.

Samples must be taken at both surface and underground locations simultaneously. The actual sampling results must be used to calculate risk. After the collection of actual data, a correlation could be made that when there are "x" VOCs in the underground, and the wind is blowing so fast in a certain direction, there are "x" VOCs on the surface.

Permittees must explain why they are not monitoring inside the buildings. Given the contamination in the underground, it is necessary to take samples where the people are, including in the Waste Handling Building.

We appreciate the difficulties in monitoring VOCs in a contaminated facility, but once WIPP reopens, VOC monitoring should return to normal.

Response: The proposed surface-based RVMP constitutes a permanent replacement of underground monitoring as a measure of atmospheric release. NMED fully supports this approach. The risk based calculation approach is identical to the risk assessment performed by the Permittees in the original RCRA Permit application Part B, Appendix D9, 1996. Please also see response to comments 12 and 19.

21. Comment: The request would eliminate the underground volatile organic compound (VOC) monitoring stations A and B. The primary reason given to move repository monitoring locations to the surface is because of the difficulty of VOC monitoring in the radiologically contaminated underground, including because sampling equipment might be radiologically contaminated (Request, p. 5). That contamination merits increased surface and underground

monitoring, not the elimination of the underground monitoring. This proposed change is totally contrary to 15 years of WIPP permit requirements, which have always provided for two underground sampling locations. That monitoring detected carbon tetrachloride exposures above expected amounts in the underground starting in 2009 that resulted in operational changes and increased protection for workers and the public. Eliminating underground VOC monitoring would significantly reduce protection of human health and the environment, so the modification should be denied.

Response: Contamination was only part of the reason for the change from underground to surface monitoring for the RVMP. Previous underground monitoring was an approximation due to the fact that during initial waste emplacement operations any VOCs present in the waste could not be detected on the surface. Now, sufficient progress with technology and the fact that there is more waste in the underground, surface VOCs can be directly sampled and analyzed. This is a preferable method than the method previously used.

22. Comment: Because of air dispersion, air in the underground is considerably different than air that has passed through the exhaust shaft and out the surface exhaust. Measuring VOCs in the underground is a more accurate reflection of the exposures of workers and others in the underground. To support surface monitoring, the permittees rely on models that are not fully described, especially the URS, 2010 report, which is mentioned but not provided. (Request, p. C-2).

Response: NMED respectfully disagrees that underground monitoring for the RVMP is more appropriate than surface monitoring. The maximally exposed individual is the non-waste surface worker located in the Training Building; the Permit does not address routine underground worker exposure. This falls under the jurisdiction of MSHA and the DOE Worker Safety Program required by 10 CFR 851 and DOE Order 440.1-1B. Furthermore, this Modification contains the most current air dispersion modeling analysis and is included as Appendix D.

23. Comment: SRIC also strongly objects to the proposed change to the fundamental basis of underground VOC monitoring, which has been to measure VOCs in the underground air in relation to numerical concentrations of concern to protect workers and public health and the environment. The request is to measure VOCs only in the disposal rooms. In other areas of the underground there would be not monitoring stations. Instead, the underground program would be changed to surface monitoring as the basis for calculating the risk to “non-waste surface worker.” Attachment N-1b. The request even proposes to add the qualifier “may” to whether VOCs are in the underground air – Attachment N-1b, first line. Of course, as the permit has stated for more than 15 years, VOCs are in CH and RH waste that has been emplaced at WIPP and VOCs are continually released.

Response: NMED has determined that the locations for VOC-C and VOC-D are adequate for their intended purpose. Please see response to comment 22. Additionally, the word “may” as discussed in this comment was not incorporated into the final Permit.

24. Comment: The request does not even mention the permittees’ supplemental ventilation system (SVS) that would exhaust some of the underground air through the Salt Handling Shaft.

See Attachment 1. The permittees must provide a modification request that fully discusses the revised ventilation system, including, among other things, how VOCs will be monitored in the SVS.

Response: The SVS is not the subject of this Modification. The SVS is designed for the underground construction ventilation circuit and not the underground waste ventilation circuit, according to current public knowledge. The SVS is not currently operational and the future status is not known at this time. The Permittees will be submitting a Permit modification in the future regarding the SVS.

25. Comment: SRIC believes that underground VOC monitoring is required for both the filtration mode and the SVS air in order to protect workers and public health and the environment. That VOC monitoring is not included in the Appendix C modeling, nor is the SVS discussed in the request, which is a gross incompleteness and inadequacy of the request, which requires its denial.

Response: NMED respectfully disagrees. Surface ambient air monitoring is preferred over underground monitoring for the RVMP. Ambient air monitoring is more protective of human health and the environment because concentrations are determined directly rather than using a series of approximations. Please see response to comment 24.

Topic 3 – Change the type of sampling equipment for VOC monitoring

26. Comment: The Permittees must state the industry standard QA/QC requirements and describe how WIPP will follow these standards. The public cannot provide informed public comments about the PMRs until that information is made available. Please state the industry standard QA/QC requirements and how WIPP will follow these standards.

Response: The Permittees follow Nuclear Quality Assurance -1 (NQA-1) 1989, which is the standard for all defense nuclear facilities. This standard has been followed since the beginning of operations and continues to be applicable. Specific projects conducted in accordance with EPA regulations, including RCRA, follow EPA/240/R-02/009, *Guidance for Quality Assurance Project Plans (QAPPs)*. The Permittees have a specific QAPP for the VOC Monitoring Plan, which includes all Quality Assurance/ Quality Control (QA/QC) requirements and their implementation.

27. Comment: SRIC does not object conceptually to the changes in sampling equipment for VOC monitoring, because the requirements are to continue to meet EPA Compendium Method TO-15. However, the request does not provide sufficient detail to adequately support the modification. For example, the proposed sampling equipment has been used at WIPP (Request, p. 10), but there is no actual data provided comparing the performance and reliability of the proposed samplers with the existing sampling equipment. Second, there is no Quality Assurance data for the new sampling equipment. Third, the only technical citation is to Occupational Safety and Health Administration (OSHA) (incorrectly named as “Occupational and Health Administration” in footnote 8) Method Number: PV2120. However, that OSHA document states

that the status of the method is “Partially validated.” The request does not explain how that is sufficient validation. Fourth, there is no specific discussion of the method in relation to EPA, not OSHA, requirements.

Response: Compendium Method TO-15, Second Edition, EPA/625/R-96/010b, which is followed by the Permittees for VOC sampling and analysis, contains specific provisions for subatmospheric pressure sampling as well as certification of the canister and passive air sampling equipment. The Quality Assurance requirements for subatmospheric sampling are also provided in method TO-15. Regardless of the citation referenced in the Modification, the inclusion of subatmospheric sampling in TO-15 demonstrates that it is a widely used approach. Please see response to comment 26.

Topic 4 - Change the sampling durations for VOC monitoring

28. Comment: As described in Topic 2 above, SRIC strongly objects to the proposed change in location from the underground to the surface for repository VOC monitoring. SRIC believes that this sampling duration request also must be denied because it is not adequately justified. The stated rationale for the change in sampling duration is that it “may remove some of the variability that is observed in the VOC results” (Request, p. 10). Variability is not the proper criterion to support such a change.

Protection of human health and the environment is the proper criterion, and the request does not specifically address that standard. If there are higher levels of VOCs during a normal work shift, as can be captured in the existing sampling duration, as compared to 24-hour duration, for which for the majority of the time there are no underground or surface workers, then the existing sampling duration should be maintained. The request does not provide verified data that the longer sampling is more protective of public or worker health, as compared with the sampling duration currently required.

Response: Available data shows that, on average, most VOCs have specific gravities greater than air and therefore sink during the night when there is little wind and is more pronounced during temperature inversions. Therefore, including data from nighttime periods provides a more conservative estimate of exposure to surface workers and is more protective of human health and the environment.

29. Comment: The proposal to change the sampling duration for the RVMP samples from six to 24 hours is conservative and protective, in light of the modeling results provided in Appendix D, pages D-14 to D-18. Sampling over a 24-hour period eliminates the impact of a shorter duration where samples might be collected during the day when atmospheric turbulence disperses VOCs released from the repository.

Response: Comment noted.

30. Comment:

Topic 4 proposes to change the procedure for sampling by changing the sampling duration for the RVMP. The Permittees are proposing to increase the sampling duration from 6-hour time-integrated samples to 24-hour time-integrated samples. Experience has shown that during a typical work day at the WIPP facility, VOC concentrations are affected by ventilation changes in the repository throughout the day. Twenty-four hour samples are less likely to be affected by these changes than shorter-duration samples. (Pg. 3)

The concentration of VOCs when workers are present is important information to know. It is data that should not be diluted by adding meaningless data from when there are no operations.

Method TO-15 refers to time-integrated samples as having 1 to 24 hour durations. Generally, samples to identify occupational exposures have a duration on the order of a work shift, typically six to eight hours. Samples for determining chronic effects to public receptors are longer in duration, typically 24 hours in duration, to average out the variability that may occur during the sampling period. Experience has shown that during a typical work day at the WIPP facility, VOC concentrations are affected by ventilation changes in the repository throughout the day. Twenty-four hour samples are less likely to be affected by these changes than shorter-duration samples. The 24-hour samples may remove some of the variability that is observed in the VOC results. (Pg. 10)

Just because the VOCs change is no reason to try to make the changes go away.

Response: Please see response to comments 28 and 31.

31. Comment: The request also would change the duration of sampling in disposal rooms. Rather than six-hour samples, the duration would be “short-duration time-integrated samples,” which are not defined or justified. Such vague phrasing is not enforceable by NMED, a further reason to deny the change.

Response: NMED has included language to clarify what “short-duration” refers to in Attachment N, Section N-3c.

Topic 5 - Revise the method of determining compliance with the surface non-waste worker environmental performance standard for air emissions

32. Comment: The Permittees discuss revising the methodology for demonstrating compliance with the non-waste surface worker environmental performance standards. The historic approach implemented in the Permit relies upon not exceeding VOC-specific concentrations of concern (COCs) in the active panel that were calculated to result in an acceptable risk to surface receptors. The proposed approach relies on the determination of the

actual risk to the receptor from the target VOCs that will be directly measured at a point of compliance. COCs are an indirect method of determining risk, whereas measurement of VOC concentrations allows a direct calculation of risk.

On page 12 of the PMR, the Permittees identify the process to calculate risk. After determining the concentration of target VOCs based on measurements at surface monitoring stations, the process is to “Subtract the results of background Station VOC-D from the results at Station VOC-C.”

However, subtraction of background is not included in the language proposed in Permit Attachment N, Section N-3e(1), thus creating a discrepancy. Instead, *ConcVOC* is defined as the concentration of the target VOC at the receptor, apparently without any subtraction. If this is the case, the Permittees should not be allowed to reduce the concentration measured at VOC-C by subtracting the background concentration measured at VOC-D. In any case, the Permit should be consistent and explicit in identifying what concentration is used to calculate risk due to exposure to each target VOC.

Response: NMED has added clarifying language to Attachment N, Section N-3e(1) to resolve this issue.

33. Comment: On page 14 of the PMR, the Permittees identify four advantages to the approach of calculating risk directly. In part, they state:

Third, reporting will be greatly simplified since a single exceedance of a COC by any particular compound will no longer have to be reported unless it is high enough to cause the overall risk or HI to exceed the action levels. Fourth, the methodology provides a more comprehensive assessment of health impacts since it considers both the carcinogenic and non--carcinogenic effects of compounds, making the risk calculations more protective of human health than the use of the COCs.

While it is clear that reporting will be greatly simplified, it could be argued that the new risk calculations are not necessarily more protective of human health, since the COC method triggered remedial action when the running annual average for any VOC exceeded its COC, providing an early warning of potential risk from either carcinogenic or non-carcinogenic VOCs.

Response: Direct ambient air monitoring is a more precise method of determining the actual concentrations of VOCs to which non-waste surface workers may be exposed. Therefore, NMED has determined that this methodology is more protective of human health and the environment.

34. Comment: Also on page 14 of the PMR, the Permittees propose to allow “alternative remedial actions” (subject to approval by the NMED Secretary) in lieu of closing active disposal rooms or panels. The specific language proposed for inclusion is in Permit Condition 4.6.2.4, Remedial Action.

The language as proposed is overly broad and unnecessary, particularly with the use of the phrase, “prior to reaching the action level.” The two examples of alternative remedial actions”

offered on page 14 of the PMR (move affected employees so that excessive chronic exposure does not occur, remediate the emissions by managing waste emplacement activities) are actions currently allowed under the Permit without prior approval by the Secretary.

It appears the intent of the language proposed in Permit Condition 4.6.2.4 is to avoid closing active disposal rooms or panels in the event of excess risk. The Permittees should be motivated to proactively and aggressively manage their operations to preclude these occurrences, not seek an “escape clause” for failing due diligence after the fact. I strongly recommend that the sentences proposed for insertion at the end of the first two paragraphs in Permit Condition 4.6.2.4 be excluded from the final Permit.

Response: Section 4.6.2 of the Permit addresses risk to the non-waste surface worker. There are many ways to mitigate excessive disposal room VOCs without resorting to closing a room or panel. NMED has determined that alternative remedial actions can and should be attempted prior to final closure actions being employed. Furthermore, NMED does not consider this modification to be an “escape clause”. Should VOCs significantly exceed the acceptable risk to non-waste surface workers, and the mitigation of those circumstances deemed impracticable, the Permittees would be required to close the room and/or panel. Additionally, the calculated risk to the non-waste surface worker represents a chronic dose received over the course of many years.

35. Comment: In order to encourage the Permittees to manage their operations to preclude these occurrences, NMED should impose a requirement under Permit Condition 4.6.2.2, Reporting Requirements, for the Permittees to report, on a quarterly basis, the most recent and the historic maximum running annual average (including measurement dates) for both carcinogenic and non-carcinogenic VOCs on a link the WIPP Home Page. This would allow the public to determine whether there are any observable potential health risks to non-waste surface workers at WIPP.

Response: NMED has determined that the current reporting requirements in the Permit are adequate. NMED also recommends that interested persons compare RVMP monitoring results that are obtained with identical methods (e.g. comparison of historic underground RVMP results with new surface ambient air sampling results may reveal inconsistencies). Please see response to comment 21.

36. Comment: The proposed modification is for a major change in determining compliance with air emissions for ten volatile organic compounds. The proposal would eliminate calculated “concentrations of concern” for carcinogenic volatile organic compounds (VOCs), which reduces protection of public health and the environment. The proposal is extremely complex, so it should be considered as a class 3 modification request. For example, more than a page of the request is four technical formulas. The request also includes significant changes in the remedial actions required.

Again, these are significant changes which should be considered as a class 3 modification request.

(Pg. 4)Topic 5 proposes to change the procedure for reporting VOC concentrations for

the RVMP by determining compliance with the non-waste surface worker environmental performance standard for air emissions using a direct calculation of risk instead of the indirect method in the Permit. The determination of risk in the Permit uses concentrations of concern to relate underground VOC concentrations to non-waste surface worker risk. Concentrations of concern were determined by the NMED by back-calculating the underground concentration associated with a specific risk at the surface. This indirect method has assumptions regarding dispersion in the atmosphere and dilution in the underground ventilation air stream. The proposed method measures the VOC concentrations on the surface, near the point of exposure, after dispersion and dilution have occurred, and, therefore, are not assumed.

- The VOCs must be sampled in the underground.
- It's a pilot plant – do the sampling.
- All assumptions need to be reexamined.
- What tests have been done to validate the models?

(Pg. 4) The proposed method uses U.S. Environmental Protection Agency (EPA) risk methodology and recommended risk factors to calculate risk. The EPA methodology is the same that was used by the NMED in establishing the concentrations of concern, however, the Permittees are updating information that was provided in the original Permit Application to satisfy the requirements of 20.4.1.900 NMAC (incorporating 40 CFR 270.23 (c) and (e)). This information is being updated based on changes to human health risk factors recommended by the EPA. The Permittees are proposing to revise procedures that are used to determine if the risk to the non-waste surface worker exceeds the risk limits established by the Permit. The Permittees are not proposing risk limits that are different than those established by the Permit. The proposed process for calculating risk incorporates risk from both the non-carcinogenic and carcinogenic effects for each compound. This process makes the risk determination more realistic than the current practice of using COCs for determining risk.

There are multiple changes in this topic, including changing the location, changing EPA risk factors by eliminating COCs, and making things more “realistic”.

(Pg. 5) The Permittees are proposing these changes at this time to coincide with recovery activities. When recovery is complete, the Permittees intend to continue surface monitoring to protect the non-waste surface worker and limit personnel access to radiologically contaminated areas in the underground. This is consistent with DOE operational philosophy to maintain personnel radiological exposures to as low a reasonably achievable.

What does the proposed sampling location have to do with DOE's “operational philosophy to maintain personnel radiological exposures to as low a reasonably achievable”? While for more than 15 years, the permit has required actual measurements of the air being breathed in the

underground, that requirement would be eliminated. Does this imply that the request will be better protection for the surface worker?

Response: Please see responses to comments 5 and 21.

37. Comment: The proposed modification is for a major change in determining compliance with air emissions for ten volatile organic compounds. The proposal would eliminate calculated “concentrations of concern” for VOCs, which reduces protection of public health and the environment. The proposal is extremely complex, so it should be considered as a class 3 modification request. For example, more than a page of the request is four technical formulas. The request also includes significant changes in the remedial actions required, all of which SRIC opposes. There is no adequate basis provided for any of the proposed remedial action changes, which are also vague and unenforceable. Again, these are substantial changes to facility operations that should be denied. If they are to be considered in the future, the changes should be considered as a class 3 modification request.

Response: NMED respectfully disagrees that the Modification is “extremely complex”. NMED has determined that the Modification is appropriately classified as a Class 2. Please see responses to comments 5 and 9.

38. Comment: The permittees also underestimate the exposure risk for workers, as they use 10 years “based on typical work practices for employees at the WIPP site” (Request, p. 12). Such a number is clearly not justified nor conservative. First, the request includes no data on actual employee work practices to support the 10-year timeframe. Second, there is no limit on the number of years workers can be at WIPP. Thirdly, the permittees routinely point out that many workers have been at WIPP for more than 10 years, so that maximum exposure is more than ten years. Fourth, SRIC representatives visiting WIPP always encounter workers that have been on the job for 15 years or more. Since the permittees intend WIPP to operate for at least 30 years, at least that duration must be used.

Response: NMED acknowledges the commenter’s concern; however, the “10-year” exposure scenario timeframe is not the subject of this Modification.

39. Comment: Moreover, SRIC strongly objects to the permittees proposed risk level. Scientific and health data clearly show that a risk level of 10⁻⁶ is more protective of public health and is a reasonable and achievable risk level. Given the multiple carcinogens that are in the WIPP wastes and the fact of substantial underground radiation contamination, which also is a carcinogen, can now continuously affect workers, human health and the environment for as long the site is open, the risk level should be more protective, including for the “non-waste surface worker.” The permittees have re-opened consideration of the risk levels for VOCs in their permit modification request, and a risk level of 10⁻⁶ should be the basis for all VOC concentrations of concern or risk levels. The proposed risk levels for the surface non-waste worker in the modification request are an order of magnitude insufficient and should not be approved.

There is substantial support for this more stringent risk level in Environmental Protection Agency (EPA) practice. For example, in both cancer and non-cancer assessments, that agency

has defined 1 in 1,000,000 excess risk as a de minimis risk level. Further, the President's Cancer Panel's April 2010 report states clearly that "The Panel was particularly concerned to find that the true burden of environmentally induced cancer has been grossly underestimated."1 Thus, a more protective risk level of 10-6 should be used for VOCs. Because of the complexity of understanding and establishing risk levels, the matter should be considered in a class 3 modification request.

In addition, some of the proposed "Recommended EPA Risk Factors" shown in Table 4.6.2.3 are not the same as shown in the EPA IRS database - <http://www2.epa.gov/iris>. The modification request does not explain those discrepancies. In addition, the Risk Factors proposed in Table 4.6.2.3 do not at all correlate with Appendix C. Both of these matters again demonstrate the complexity of the proposed change, which requires it be considered as a class 3 modification request.

Response: NMED respectfully disagrees that the issue of the total risk limit has been reopened for consideration as part of this Modification. The total risk limit of 10^{-5} will not change as part of this action. The commenter correctly identifies the discrepancy in Table 4.6.2.3. NMED has determined the discrepancy to be a typographical error contained in the Modification and has corrected the IUR for Chloroform to read 2.3×10^{-5} in Part 4, Table 4.6.2.3 of the final Permit. NMED has verified the rest of the values contained in the Modification. Please also see response to comment 16.

Topic 6 - Remove the minimum running annual average (RAA) mine ventilation exhaust rate

40. Comment: 9. The Permittees' discussion under Topic 6 contains some incorrect information. It states

The model started with the VOC concentration that resulted in an acceptable risk to the non--waste surface worker and applied an air dispersion factor to calculate the concentration at the top of the Exhaust Shaft. A corresponding concentration was calculated at the bottom the Exhaust Shaft by assuming a repository ventilation flow rate of 425,000 scfm. Because the measurement point, known as Station VOC--A is some 1,300 feet south of the base of the Exhaust Shaft, a corresponding concentration was calculated assuming a disposal circuit ventilation rate of 130,000 scfm. The resulting concentrations became the COCs for each compound. The values in Table 4.6.2.3 are the acceptable concentrations if the repository and disposal circuit ventilation rates are 425,000 and 130,000 scfm, respectively.

In 2006, the Permittees modified the Permit to change the manner in which compliance with the COCs in Table 4.4.1 is demonstrated. In lieu of individual headspace gas measurements on each container and specification of the container filter vent characteristics, direct measurement of filled disposal room concentrations was instituted. This action broke the tie between disposal room concentrations and concentrations at Station VOC--A since compliance with one can now be managed independently of the other and the numerical model simulating the flow from the

container to the monitoring station is no longer relevant. Since this model, including its assumptions regarding minimum flow rates is no longer needed, the minimum repository ventilation flow rate of 260,000 scfm is likewise no longer necessary to protect human health or the environment. (emphasis mine)

Actually, the COCs were calculated assuming a mine ventilation exhaust rate of 260,000 scfm, hence the imposition of this value as the minimum running annual average mine ventilation rate in Permit Condition 4.5.3.2, Ventilation (see attached spreadsheet “VOC Releases.xls” [tabs “sur--fnl--5” and forward] and the November 19, 1998 memorandum, pages 7-8, referenced in footnote 13 of the PMR). Changes implemented in 2006 by which compliance with the COCs in Table 4.4.1 was demonstrated did not “break” the tie between COCs and concentrations at Station VOC-A, nor they did render the numerical modeling “no longer relevant.” COCs were calculated the same way in 2006 and again in 2010 during the first renewal of the WIPP Permit as they had been in 1998. The only reason the minimum repository ventilation flow rate of 260,000 scfm is now no longer necessary is because the Permittees are proposing to measure VOC concentrations at the point of compliance at newly designated Station VOC-C and directly calculate the resultant risk. I support removal of the minimum running annual average mine ventilation exhaust rate from Permit Condition 4.5.3.2.

Response: Comment noted.

41. Comment: I support the overall approach to managing risk from VOCs to receptors on the surface as proposed in the PMR. It is made possible primarily by the significantly improved maximum method reporting limits (MRLs) imposed in Permit Attachment N, Table N-2 for surface monitoring samples. This, coupled with refined air dispersion modeling at lower exhaust ventilation rates confirming Building 489 as the location of maximum impact from VOC releases, should ensure a technically defensible monitoring program for protecting human health at WIPP. I believe incorporation of my comments strengthen the program by reducing ambiguity and providing public access to relevant information.

Response: Comment noted.

42. Comment: The reason to eliminate the 260,000 cubic feet per minute (cfm) permit requirement is because it can no longer be met because WIPP’s ventilation is limited to 60,000 cfm in filtration mode. That is not a reason to eliminate a provision of the permit that protects human health and the environment, as well as underground workers.

Any request to change the RAA should be in a comprehensive class 3 permit modification that describes the new ventilation system and demonstrates that it would be at least as protective of public health and the environment during waste handling operations as the existing permit requirements.

There are currently too many unknowns concerning the future of the ventilation system at WIPP to remove the minimum running annual average (RAA) mine ventilation exhaust rate. For instance, the Defense Nuclear Facilities Safety Board has observed

“Of note, once the SVS [supplemental ventilation system] system becomes operable, emergency underground egress through the salt shaft will no longer be possible as the SVS exhausts out this shaft.” http://www.dnfsb.gov/sites/default/files/Board%20Activities/Reports/Site%20Rep%20Monthly%20Reports/Waste%20Isolation%20Pilot%20Plant/2015/mr_20150930_122.pdf

Response: The mine ventilation running annual average (RAA) is no longer relevant to the RVMP because the target concentrations are being determined directly through ambient air monitoring at the receptor location. Additionally, NMED has reviewed the submitted air dispersion modeling and has determined that variations in the mine exhaust rate have little influence on ambient air concentrations. Please also see response to comments 7 and 43.

43. Comment: The reason to eliminate the 260,000 standard cubic feet per minute (scfm) permit requirement, which has always been in the permit, is because it can no longer be met because WIPP’s ventilation is limited to 60,000 scfm in filtration mode (Request, p. 6). That is not an adequate reason to eliminate a provision of the permit that protects human health and the environment, as well as underground workers. The request should be denied. Any request to change the RAA should be in a comprehensive class 3 permit modification that describes the new ventilation system and demonstrates that it would be at least as protective of public health and the environment during waste handling operations as the existing permit requirements.

SRIC has stated repeatedly during the permitting process, the permit renewal process, and modification requests that the primary concern is that adequate ventilation always be maintained in the Underground Hazardous Waste Disposal Units (HWDUs). The concern is reinforced by the measured levels of VOCs in the Underground HWDUs during the past six years prior to February 2014, during which time workers were exposed to higher levels of carbon tetrachloride than were contemplated when the permit was issued in 1999.

Now underground workers and the public could be chronically exposed to VOCs and radioactivity. The increased health effects of those carcinogens have not been studied in WIPP workers and the public (nor included in determining EPA IRIS risk levels). The ventilation rate is a key requirement for any WIPP operations and should be included in the permit. Ventilation also has an important element in worker exposures. The existing RAA is much more protective of human health and the environment than no RAA, as the permittees propose. The request would reduce protection of public health and the environment and should be denied.

Moreover, as the fire and radiation release demonstrated, the ventilation system does not fully control underground air flow as it is supposed to do. For example, air flow and smoke exhausted through the salt handling shaft during the February 5 fire, rather than out the exhaust shaft. The radiation release contaminated areas in the underground that were supposed to have had no air flow or were upstream from the described ventilation flow. Given those realities, the ventilation system is an essential part of the facility operations and the permit, and the minimum repository air flow requirements must be maintained.

Response: NMED has verified the input and output values generated through the Permittee’s air dispersion model. Reduced ventilation flow does not significantly increase ambient air impacts

to a surface worker due to VOCs emitted from the Repository. Underground worker exposure is regulated by MSHA and OSHA requirements have been delegated to the DOE and is implemented under 10 CFR 851 and DOE Order 440.1-1B.

Topic 7 – “Minor editorial changes”

44. Comment: SRIC does not object to “minor editorial changes” that are properly class 1 modifications. However, many of the editorial changes cannot be approved because they relate to the substantive topics for which the requests must be denied. Rather than taking NMED resources to closely examine all of the supposed editorial changes, they should not be approved. Instead, after NMED’s determinations on the modification package, the permittees could submit a class 1 modification request to incorporate then necessary changes into the Permit.

Response: Comment noted.