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October 31, 2002

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**Regarding: Remote Handled Transuranic Waste**

Dear Mr. Zappe,

**Nuclear Watch of New Mexico (NWNM)** believes that the Remote Handled Transuranic Waste (RH TRU) permit modification request (PMR) should be denied.

As you know, the New Mexico Hazardous Waste Act (20 NMAC 4.1.900, incorporating 40 CFR 270.42(c)(6)), provides that the New Mexico Environment Department (NMED) may deny a Class 3 modification.

NWNM is strongly opposed to this modification as it is a threat to human health and the environment, and it is technically incomplete.

The following reasons will support our request to deny.

To begin, NWNM is greatly concerned over the lack of sound knowledge of the RH TRU waste inventory in the Department of Energy nuclear complex. This lack of substantial knowledge leaves us to believe that there will be problems with the characterization that the permittees are planning to use, and that they may have under estimated a number of key factors to their plan. It appears that the permittees are taking a "see as we go" approach to characterizing the RH TRU inventory, and while this may be acceptable to the permittees this is unacceptable to NWNM.

By stating that 95% of the RH waste has to be packaged or repackaged, the permittees have attempted to make the public feel better about their waste characterization, or rather the lack thereof. Quite the contrary has occurred, however, and we believe that their characterization plan is woefully inadequate and requires much more than what the permittees have offered through their quality assurance objectives (QAOs): precision, accuracy, completeness, comparability and representivness.

These QAOS appear to be the heart of the permittees RH TRU waste analysis plan (RH WAP). This says a great deal about the RH WAP and clearly there is a need to expand the RH WAP to avoid any pitfalls that may be inherent to the RH WAP and the QAOS. However, in this matter, the problems with the RH TRU characterization, RH WAP and the QAOS are currently too great due to their vague nature and incompleteness. Because of this NMED must deny this PMR.



In addition, the permittees have avoided dealing with a number of items that should be of concern. The permittees state that if by chance there is a problem with a RH TRU drum they would then deal with it in the same way they deal with contact handled (CH) TRU waste – they would overpack it. Nowhere in the PMR do the permittees explain this process, nor do the permittees state what they will use for overpacking RH TRU! This is a tremendous oversight on the permittees' part. Of course the permittees believe that because they must package or repackage nearly all of the RH TRU waste that the chances of a problematic RH container is unlikely. However, this gives the permittees no right to completely ignore the issue. Clearly this shows how the permittees have again created a technically deficient permit modification. Therefore, NMED should deny this PMR.

Added to this is the problem of actually detecting a problematic shipment. As we have recently seen, a shipment of CH TRU waste from the Idaho National Engineering and Environmental Laboratory (INEEL) made it all the way to WIPP only to be sent back because of radiation in the TRUPACT-II! While the permittees explain that if a problem is found with a RH shipment it will be detected in the hot cell and the shipment dealt with accordingly (i.e., overpacked, sent back to the generating site, etc.). While this may be all that the permittees are able to accomplish considering worker safety and as low as reasonably achievable (ALARA) standards, NWNM has not seen any documentation to suggest that this is the only method of accepting RH TRU at WIPP. NWNM is concerned that the hot cell is the only place to detect problems with waste shipments. It would be appropriate to find additional measures for detecting problems.

Furthermore, we have concerns with the permittees' decision not to sample volatile organic compounds (VOCs). While NWNM is fully aware of the need for worker safety, we are concerned that too little is being done to avoid dangerous situations at WIPP. Nowhere in the PMR do the permittees go into detail on the matter of remote headspace gas sampling. Why is this an infeasible approach? RH TRU is clearly more radioactive and hence potentially more dangerous than CH TRU. For these reasons it seems appropriate to do everything possible to make certain that RH TRU goes through just as much of a screening process as CH TRU, and preferably more.

Another point of concern for NWNM is the lack of supporting documentation for this PMR. While the permittees supplied several supplements for the PMR, many of the references in those supplements could not be found. Ironically, the Transuranic Waste Baseline Inventory Report, DOE/CAO-95-1121, Revision 3 (one of the most cited reports in the PMR) was not found by us during a thorough Internet search. If the permittees are going to cite references in their documents, and of course they should, they should make those references as accessible as their PMRs. This lack of documentation makes it impossible for the public to confirm or deny the permittees' claims throughout the PMR. This is further evidence that the PMR is incomplete.

Perhaps the permittees have bitten off more than they can chew with their intent to dispose of remote handled transuranic waste. While the Department of Energy (DOE) intends to proceed with its accelerated "cleanup" program, NWNM has yet to see how

WIPP as a whole is operating satisfactorily. Through this purported accelerated cleanup, DOE is claiming faster, cheaper, better cleanup, but NWNM sees an emphasis on cheaper and faster, not necessarily better. The fact of the matter is that WIPP has not maintained its deadlines to date for their throughput and now expects to be able to deliver an even faster cleanup deadline, including RH TRU. This seems improbable at best. It may be in the best interest of the permittees, the Environment Department, and the public at large that WIPP keep working on CH TRU waste until they can get that part of their permitted mission right. Once the permittees better perfect that part of their mission, only then should the permittees consider submitting an RH TRU PMR. In fact, by that time, perhaps the permittees may understand the difference between a PMR that is complete and does not endanger human health or the environment, and an incomplete one like this.

NWNM has had the opportunity to have Bernd Franke, Scientific Director of IFEU-Institut für Energie- und Umweltforschung, (Institute for Energy and Environmental Research) of Heidelberg, Germany look over the RH TRU PMR. His comments follow:

**1. The permit modification request is deficient in documenting the radionuclide inventory of the RH TRU.**

Supplement 1 of the permit modification request contains a list of estimated stored activity in Ci in the RH TRU waste. Table 4 indicates that the total activity is estimated to be 662,000 Ci; the TRU inventory is estimated to be 3,880 Ci. Because the permit limits the overall inventory, the accuracy in the estimated activity is an important issue. The draft permit modification does not contain verifiable documentation as to the measurements and calculations that form the basis for the inventory estimate.

**2. The permit modification request is deficient with respect to the documentation of the estimated concentration of cellulose, plastics and rubber in the RH TRU waste.**

Table 6 in Supplement 1 of the permit modification request contains estimated ranges of concentrations in cellulose, plastics and rubber. The ranges are large (e.g. Battelle Columbus Laboratories, Ohio: 0 kg/m<sup>3</sup> to 1,430 kg/m<sup>3</sup> with an average of 117 kg/m<sup>3</sup>). The reported accuracy to three digits is dubious, the exact same range and average are reported for waste from the Bettis Atomic Power Laboratory, Pennsylvania. To have the same precise range and average for the waste from these two sources is highly unlikely. The exact knowledge of the amount of plastics and rubber in the RH TRU waste materials is essential for the estimate of VOC releases. Because of this, the permit modification request is severely deficient in this respect. The calculations on page 7 of supplement 3 assume a total cellulose, plastics and rubber mass in RH inventory of  $2.7187 \times 10^5$  kg quoting the Transuranic Waste Baseline Inventory Report, Revision 3 as the source. Given the expected volume of 1,972 m<sup>3</sup> of RH TRU waste (Supplement 1, Table 1), the average concentration of cellulose, plastics and rubber can be calculated to be 138 kg/m<sup>3</sup>. That number does not fit with the averages reported in Table 6 which are all less than 138 kg/m<sup>3</sup>.

**3. The permit modification request is deficient with respect to the breakdown of materials in the category of cellulose, plastics and rubber in the RH TRU waste.**

The exact breakdown of materials in the category of cellulose, plastics and rubber is essential to determine the releases of VOC and HCl from radiolysis in the RH TRU waste. The permit modification request does not contain any information in this respect. An important issue is the amount of PVC in the waste because radiolysis can cause the production of HCl, which can cause corrosion of the waste containers. The permit modification request does not contain any information with regard to the amount of PVC or other chlorinated compounds in the RH TRU waste.

At matters stand today, granting the permit modification in this way will not provide adequate assurance that corrosive wastes are not contained in the RH TRU waste containers.

**4. The calculations regarding the VOC emission rates in Supplement 3 are not properly documented; they are incomplete and not conservative.**

Supplement 3 of the permit modification presents a summary of calculations. The basis of the calculations is only partially documented. The following information is lacking:

- Basis of values for the mass of cellulose, plastics and rubber in comparison to data in Supplement 1 (see above)
- Rationale for assuming an average inventory of equivalent cellulose in RH inventory
- An uncertainty evaluation of the calculations
- A calculation of the production of benzene
- An analysis of the generation of HCl due to hydrolysis and the impact on RH TRU waste with regard to the corrosivity criterion.

The calculations themselves are not conservative. An average value for cellulose was used in the calculations. While the average concentration is  $138 \text{ kg/m}^3$ , the reported concentration of cellulose in RH TRU waste are up to  $1,430 \text{ kg/m}^3$ , based on data provided in Table 6 of Supplement 1. It is quite possible that average concentration in the canisters in one room will contain cellulose that exceeds the value assumed in the calculations.

In addition, the assumption of a steady-state VOC generation rate is not in agreement with the nature of gas generation which is non-uniform and can peak at certain times. Thus, the room emission rates are expected to vary from year to year. The permit modification request should include an uncertainty analysis to this effect.

As matters stand today, granting the permit modification in this way will not assure that the VOC concentrations in the rooms where RH TRU waste containers are stored will remain below the set limits.

**5. The waste characterization is not acceptable.**

The permit modification request does not include a requirement to perform radiographic or visual examination on 100% of the containers. This is not acceptable. Past experience has shown that the visual examination and real-time radiography (RTR) have not always been adequately performed. In fact, some materials banned from WIPP (e.g. sealed containers greater than 4 liters) were not identified by RTR.

If all RH TRU waste is not fully characterized in this way, materials which are banned from WIPP may actually be accepted. In this respect, the permit modification request does provide reasonable proof that the proposed waste characterization process is substantially identical with that for CH TRU waste.

**6. The permit modification request is deficient with respect to QA/QC procedures.**

The permit modification request does not contain a section dealing with the QA/QC procedures in connection with the data on RH TRU waste. A detailed set of QA/QC procedures should be prepared as part of the permit modification request describing the steps of data verification, chain-of-custody, performance auditing of all components and instrumentation used in managing RH TRU at WIPP.

Heidelberg, October 30, 2002  
Bernd Franke

In summary, this permit modification request is technically incomplete in a number of ways:

- Reference materials were difficult, and in some ways impossible to come by
- No explanation of the overpack method
- There is no section dealing with quality assurance or quality control
- The section on waste characterization is insufficient
- VOC calculations are improperly documented
- Documentation in the category of cellulose, plastics and rubber was insufficient
- The radionuclide inventory was deficient
- Among others

With these deficiencies it is clear that human health and the environment has not been adequately accounted for and therefore endangers it.

It is for these reasons that **Nuclear Watch of New Mexico** requests that the New Mexico Environment Department deny this permit modification request.

Thank you for your consideration of our comments.

Sincerely,

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