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ADMIN RCD

SUBJECT NYS- RESPONSE TO COMMENTS ON NESPAP CALCS & TM OF REVISED HSP

FROM K. JK

TO GIARDINA

COMM DATE 02/01/93

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CLOSER CCM 107890-01 NBS 158

SUBJECT CODE 7190

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C 093085

C 090874

DOCUMENT C 066148

C 060049

C 104795

A 202-1-02

TRACS

RESPONSE TRACKING INFO

PRIMARY

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TARGET DT

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SECONDARY

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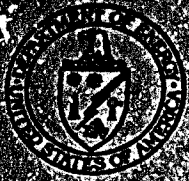
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FSRD CHRON FILE			/					ESH & WASTE MGMT		BEH	
FSRD NOTEBOOKS								SAFETY & HEALTH		BEH	
READING FILE			/					ENVIR COMPLIANCE		BEH	/
DOE/PCD:	French/Bletrunk	DOO						WASTE MGMT		BEH	
DOEMQ:	J. Wagoner	DHO						PROCUREMENT		BPO	
								PROJECT ADMINISTRATION		BPA	
				TMA/BEPLINE		BET		TECHNICAL REPORTS		BTR	
ANL:	A.J. Dvorak	ANL		SITE: 158 NFBS				PROJECT AUTOMATION		BAU	
	A. Gelsler	ANL		TONAWANDA INFO CTR				PROJECT CONTROLS		BPC	
	G. Meraman	ANL		157 WBS				COMMUNITY RELATIONS		BCR	
	D. Dunning	ANL		138 MISS/INFO CTR				QUALITY ASSURANCE		BOA	
	J. Wang	BNL		138 COLONE (CISB)				ADMIN RCD/INFO REPOSITORY			
ORISE:		ORISE		140 / 188 LATTY AVE/BLAPS				POCC READ FILE			
ORNL:		ORNL						POCC SENSITIVE/CHRON FILE			

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NFSS_0783



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108075

Department of Energy

Oak Ridge Operations
P.O. Box 2001
Oak Ridge, Tennessee 37831-P723

September 1, 1993

Mr. Paul A. Giardina, Chief
Radiation Branch
U.S. Environmental Protection Agency, Region II
26 Federal Plaza
New York, New York 10278

Dear Mr. Giardina:

NIAGARA FALLS STORAGE SITE - RESPONSE TO COMMENTS ON NESHAPS CALCULATIONS AND TRANSMITTAL OF REVISED SAFETY AND HEALTH PLAN

This letter transmits responses to comments, as stated in your letter dated August 10, 1992, on the NESHAPS calculations of the revised effective dose equivalent (EDE) rate for the U.S. Department of Energy's (DOE) Niagara Falls Storage Site (NFSS) located in Lewiston, New York. This letter also addresses an open item regarding the Safety and Health Plan (SHP) for NFSS.

The NESHAPS calculations of the revised EDE rate for NFSS were computed after conversations with you concerning the EDE rate that was originally reported in the 1990 NESHAPS, Subpart H Report. The EDE rate was recalculated using an approach that refined the assumptions used as input to the AIRDOS-PC model. At your request, these calculations were submitted to your office on May 27, 1992. During the radionuclide NESHAPS inspection conducted at NFSS by Ms. Jennifer Magruder of EPA on June 24, 1992, EPA's comments concerning the above calculations were informally presented to DOE. These comments were restated in your August letter and are addressed in the enclosed comment response document.

DOE committed in a letter to EPA dated September 5, 1991 that federal, state, and local emergency notification numbers would be added to both the NFSS and the Middlesex Sampling Plant SHPs. As of the date of the inspection, this had not been done for the NFSS SHP. The above emergency notification numbers were added to the NFSS SHP by a revision order prepared on June 23, 1992. However, a copy of the plan and revision order was not forwarded to you as requested. A copy of the current NFSS SHP and applicable revision documents are enclosed. In addition, a second copy of the plan will be made available for Ms. Magruder when she conducts this year's inspection of the site on September 2.

If you have any questions concerning the responses to the comments and recommendations on the NESHAPS calculations, or the revised NFSS SHP, please contact me at (615) 576-7477.

Sincerely,

Ronald E. Kirk

Ronald E. Kirk, Site Manager
Former Sites Restoration Division

Enclosures

cc (w/o enclosures):
Dr. Paul Merges, NYSDEC

Revised Computation of the Effective Dose Equivalent Rate
 Comment Response/Resolution

Comment 1

The intended objective is to determine the radium (Ra) escape from the storage pile. The known quantities are:

- 1) the amount of radium entombed
- 2) therefore, the amount of radon generated is known
- 3) the radon escape (20,234 pCi/s)

By using the following factors, the radium escape should be able to be calculated:

- 1) the amount of radium entombed
- 2) surface area of storage pile (10 acres?)
- 3) the same escape rate as radon
- 4) a conversion factor which would take into account that solid travels much slower than gas

Response

The methodology used in the calculation is basically the same as your suggested approach. The only difference in the approach is in the calculation of an equivalent non-vegetated area that was used in the calculation methodology outlined in EPA's Rapid Assessment of Exposure to Particulate Emissions from Surface Contamination Sites. The equivalent area was based on the efficiency of the pile cover to attenuate radon. This equivalent area serves the same function in DOE's methodology as the conversion factor serves in your approach. Both methodologies establish relationships between particulate loss and the radon loss from the disposal structure.

Comment 2

At the bottom of sheet number 4 (calculations sheets) the assumption that only 0.001% of the radium generated makes it to the clay cap is made. The basis for this assumption should be stated.

The calculation should have read "0.001 percent of the radon generated within the pile makes it to the clay cap." This correction has been made in the calculation for 1992. The 0.001 percent value is based on the knowledge that the majority of the radium within the pile (99.6 percent) is contained within residues that are located at the core of the cell. The residues are covered by a minimum of 10 ft of clay soil which contains much less radium than the residues and attenuates the radon generated by the residues at the core of cell.

Per EPA's Final Environmental Impact Statement for Remedial Action Standards for Inactive Uranium Processing Sites (40 CFR 192), a typical half value life (HVL) for clay soil is 0.12 meters. The HVL represents the thickness of material which reduces radon emissions to one-half its initial value.

Typically, the rule of thumb is 10 HVLs reduce the release of radon to 0.1 percent of the uncovered rate. The 10-ft cover of clay soils for the storage pile represents 25 HVLs. The relationship between HVLs and thickness of material is not linear and asymptotically approaches zero; therefore, the calculation takes full credit for all of the HVL values greater than 10 without using the 100 percent attenuation factor (i.e., stating that 0 percent of radon generated by the core made it through the clay overburden).

Comment 3

On sheet number 6, the area source is being defined as 44,516 m² while on sheet number 4 it appears to be defined as 40,460 m².

The value on page 6 (i.e. 44,516 m²) is incorrect. The area of the pile is ten acres (i.e. 40,460 m²). The surface area of the pile was determined by measuring the site plan of the pile. The site plan is based on a site survey. This data has been corrected in the current year's calculation.

Comment 4

On sheet number 6, where the on-site radiological concentrations are listed; the value for radium (5,958 Ci/g) should be checked in comparison to the 2,088 Ci/g of Ra given on sheet 4. (It should be noted that the K65 value is much higher. Do not dilute with soil outside of the containment cell).

Page 4 does not call out the radium concentration as 2,088 pCi/g; page 4 states that the total amount of radium in the pile is 2,088 Ci. Page 6 calls out the on-site radium-226 concentration as 5,948 pCi/g, not 5,948 Ci/g. The 5,948 pCi/g concentration is based on estimates of curies of radium-226 in the containment structure (2,088 Ci) and a pile volume of 255,00 cubic yards of contaminated wastes and residues within the containment structure.

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In the summary of results it is stated that "the area source used to calculate the particulate release rates at NFSS consists of the total contaminated on-site grass surfaces". This statement is incorrect for the intended purposes of these calculations. The concern here lies only with the grass surfaces from the zone above the cell, not the total contaminated on-site grass surfaces.

The statement from the calculation is unclear in its wording. The statement would be clearer if reworded to cite that "the area source used to calculate the particulate release rates at NFSS is equivalent to the total grassed surface of the zone above the cell. The calculations, however, only consider the grass surfaces covering the cell (i.e. 10 acres). There are no contaminated grass surfaces onsite; the contamination in the cell is covered by a clay cap and vegetation.