



2/1/96

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
475 ALLENDALE ROAD
KING OF PRUSSIA, PENNSYLVANIA 19406-1415

March 15, 1996

Mr. William P. Kirk
Bureau of Radiation Protection
Department of Environmental Resources
Post Office Box 8469
Harrisburg, Pennsylvania 17120-8469

Dear Mr. Kirk:

On February 1, 1996, we met with you to explore regulatory options for final disposition of the sludge ash, contaminated with low levels of uranium, at the Kiski Valley Water Pollution Control Authority facility. During that meeting, we detailed some options and briefly discussed the costs and benefits associated with the various alternatives. The enclosures to this letter provide details of that meeting.

We believe that our meeting was beneficial and, due to our mutual interest, a necessary step toward achieving a safe and effective solution. We look forward to meeting with you again at some time near the end of April or early May 1996. At our next meeting, we would like to discuss the information we have gathered as a result of the follow-up tasks listed in Enclosure 3 to this letter.

Thank you for assisting us in coordinating this meeting. We understand how much work it takes to assemble such a multi-disciplined group of State experts and appreciate the cooperative nature of your approach.

Sincerely,

David J. Chawaga
David J. Chawaga
Regional State Liaison Officer

Enclosures:

- 1) Meeting Agenda and Attendance List
- 2) Summary of Options
- 3) Follow-up Commitments
- 4) KVVPCA Talking Points Paper
- 5) KVVPCA Fact Sheet

cc:

Mr. William P. Dornsife, Pennsylvania Department of Environmental Protection
Mr. James P. Snyder, Director, Bureau of Waste Management, PADEP
Mr. James Yusko, Regional Manager, Field Operations-Rad. Protection,
PADEP, Southwest Region (for Charles Duritsa)

2/1/96

AGENDA
for
NRC and PADEP
Meeting to Discuss the
Kiski Valley Water Pollution Control Authority
Sewer Sludge Ash

February 1, 1996
10:00 a.m.

- | | |
|---|-----------|
| 10:00 Opening and Introductions | PADEP |
| 10:15 Physical Description of Ash Lagoon and
an Overview of Current Status | NRC/PADEP |
| 11:00 Overview of NRC's Issues, Concerns
and Regulatory Role | NRC |
| 11:30 Overview of PADEP's Issues, Concerns
and Regulatory Role | PADEP |
| 12:00 Break for Lunch | |
| 1:00 Description of Disposal Options
- Capping Onsite
- LLW Landfill
- Local Landfill
- Mixing and Dilution
- SLDA | NRC/PADEP |
| 2:00 Discussion of Future Actions | NRC/PADEP |
| 3:00 Meeting Adjourned | |

*A number of items were given to
NRC at this meeting (followed by a
report on the results) same date 12/14/95
reported 1/17/96
NRC/PADEP this is the first of the 9/2/96*

List of Attendees

NRC - Region I

C. William Hehl, Director, Division of Nuclear Material Safety
Todd Jackson, Health Physicist, Decommissioning and Laboratory Branch
David Chawaga, State Liaison Officer, Office of the Regional Administrator

NRC - Headquarters

Margaret Federline, Deputy Director, Division of Waste Management
Mike Weber, Chief, Low Level Waste & Decommissioning Projects Branch
Bob Nelson, Section Leader, Low Level Waste & Regulatory Issues (LLRI)
Donna Moser, Health Physicist, LLRI

Pennsylvania Department of Environmental Protection - Harrisburg Office

Bob Barkanic, for Jim Rue, Dep. Sec for Air, Recycling & Radiation
Gail Jackson, for Terry Fabian, Dep. Sec for Field Operations
Bill Dornsife, Director, Bureau of Radiation Protection
Bill Kirk, Acting Chief, Environmental Radiation Division, BRP
Gail Phelps, Office of Chief Counsel
Bill Pounds, Chief, Municipal Waste Div., BLRWM

Pennsylvania Department of Environmental Protection - South West Regional Office

Michael Forbeck - LRWM
Manny Miller - LRWM
Jody Rosenberg - Office of Regional Counsel
John Winston - Radiation Protection
Jim Yusko - Regional Health Physicist

Summary of Options Discussed for Disposition of Sludge Ash

The following options for disposition of uranium contaminated sludge ash currently located at the Kiski Valley Water Pollution Control Authority facility were briefly discussed during a meeting between the NRC and the PADEP, on February 1, 1996. At the conclusion of the meeting, all parties agreed not to eliminate any of these options from consideration prior to detailed analysis. Factors such as public and worker safety, environmental impact, cost, timeliness, public concern and regulatory restrictions will be considered as each option is evaluated.

The following options are not listed in any particular order.

- Disposal of material at an NRC licensed Low Level Radioactive Waste Disposal Facility.
- Stabilization of material onsite.
- Disposal at municipal landfill.
- Blending on site (KVWPCA) prior to municipal landfill disposal.
- Disposal with waste currently at the Parks Township Shallow Land Disposal Area.
- Beneficial use. (The material could, perhaps, be a construction or transportation resource or used as a fill dirt to prevent subsidence, etc.)
- Pilot Plant Processing.
- No Action (leave in place at this time.)

The NRC and the PADEP remain open to consideration of other options not stated above.

Actions Needed to Progress Toward Resolution and Responsible Organization

- 1) Assess archived samples at ORISE including solubility of uranium. (NRC, PADEP)
- 2) Contact Department of Energy to evaluate potential sources of funding. (PADEP)
- 3) Evaluate permitting/licensing considerations. (PADEP/NRC)
- 4) Evaluate liability issues. (DEP)
- 5) Evaluate liability issues relative to other similar situations (Northeast Ohio Regional Sewer District case, Section 2.206, etc.). (NRC)
- 6) Evaluate beneficial uses. (PADEP)
- 7) Evaluate contamination particle size. (NRC)
- 8) Assess radiation and transportation risks for options involving municipal landfill disposal or disposal with Parks Township SLDA waste. Assess radiation risk if left in place. Assess transportation risk if shipped to an NRC licensed burial facility. (NRC)

Talking points

Kiski Valley Water Pollution Control Authority (KVVWPCA)
Sludge Ash Issue

STATUS

- On December 7, 1995 NRC, PADEP, KVVWPCA, and Chester Environmental met to discuss the ultimate disposition of sludge ash which has been contaminated with enriched uranium.
- PADEP is requiring KVVWPCA to remove and dispose of the ash because it is stored in an unlined lagoon and violated PADEP's landfill regulations.
- The lagoon contains between 2-3 curies of uranium (>350 grams) and is therefore licensable by the NRC, although we currently have no plan to license.
- There is a total volume of approximately 10,000 m³ of contaminated ash in the lagoon.
- KVVWPCA has a budget of a couple hundred thousand dollars to pay for the disposal of the ash.
- NRC performed a dose assessment which determined that there is no immediate health risk to the public or the workers at the site from the contaminated ash. There is a potential for long term risk.
- Although the enriched uranium originated from the B&W facilities (Apollo and Parks Township) it appears as though they released the material in accordance with the regulations which were in place at the time; B&W has not offered or accepted responsibly for contamination.

RESOLUTION

- Several options for disposal:
 - Low-Level Waste Disposal Facility
 - Stabilization and Capping On-site
 - Disposal in Municipal Landfill Over Time
 - Blending with Current Ash to Reduce Concentration and Disposal in Municipal Landfill
 - Burial with other waste at the Parks Township Shallow Land Disposal Area (SLDA)
 - Beneficial Use (i.e., mix with cement)

- It could cost an estimated 10 - 100 million dollars for the material to be sent to a licensed low-level waste facility.
- The site is very close to the Kiskiminitas river located in the flood plain and over shallow groundwater. It does not appear that an on-site remedy would be sufficient to protect health and safety. ✓
2/11/06

BOTTOM LINE

- NRC and the PADEP need to work together to find an acceptable resolution to this issue.
- It appears that an off-site remedy would be the best resolution to the issue as long as the protection of public health and safety can be assured.
- NRC would support resolution of this issues by performing a dose analysis for both workers and the public for disposal of sewer sludge at a municipal landfill.

Mr. William P. Kirk

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bcc:

- C. Hehl, DNMS
- T. Jackson, DNMS
- D. Chawaga, RSLO
- M. Federline, NMSS
- M. Weber, NMSS
- B. Nelson, NMSS
- D. Moser, NMSS
- H. Astwood, NMSS

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OFFICE	RI/RSLO	<input checked="" type="checkbox"/>	NMSS/DWM	<input checked="" type="checkbox"/>	RI/DNMS	<input checked="" type="checkbox"/>				
NAME	D. Chawaga		R. Nelson		C. W. Hehl					
DATE	03/15/96		03/15/96		03/15/96		03/ /96		03/ /96	

OFFICIAL RECORD COPY

Fact Sheet

Kiski Valley Water Pollution Control Authority (KVVWPCA)
Sludge Ash Issue.

- The KVVWPCA facility/lagoon was opened in 1975 and operated up until December 1993.
- Apollo was connected to the KVVWPCA in 1976, so the lagoon contains about 17 years of B&W effluent from both Apollo and Parks.
- The ash lagoon is approximately 2 acres and up to 9 feet deep. It contains 10,000 cubic meters of ash.
- Wastes from the Apollo North Sewer were sent to the KVVWPCA because it contained sanitary wastes; the South Sewer effluent was only sent to the river, and was not required to be connected to the KVVWPCA because it did not contain sanitary waste.
- Parks Township sends sink and shower water to the KVVWPCA but that does include mop water from contaminated areas. This waste water is sent to a hold-up tank, sampled, and then released to the sewer system.
- PADER ordered the KVVWPCA to change their process from a liquid to a dry method in early 1994 and they stopped using the sludge ash lagoon in early 1994. PADER also ordered the KVVWPCA to get rid of the sludge ash or cap it in place.
- In April 1994, PADER informed the NRC about potential radiological contamination of sewer the sludge ash based on analysis of a 15-unit composite sample. NRC requested a portion of the composite sample to send to Oak Ridge for analysis to confirm these findings in September 1994. (Results below)
- The ash was also sampled and analyzed by NRC Region I in 1985, and by KVVWPCA in February 1994. (Results below)
- In May 1995 ORISE issued the final report for the characterization of the ash lagoon. (Results below)

Results of analysis of incinerator ash in pCi/g

	1985 NRC	2/94 KVVWPCA	4/94 PADER	9/94 ORISE	5/95 ORISE
U-234	21		34	56	
U-235	10		5	3	.4 - 34
U-238	69		8	12	4 - 145
total U	100	14 & 57	47	78	16 - 923

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Volume and Concentration Calculations

Kiski Valley Water Pollution Control Authority (KVVWPCA)
Sludge Ash Issue

Table showing estimated volumes of ash contaminated with specific concentrations of uranium.

Concentration pCi/g U	Est. Volume in m ³
0 - 30	3100
30 - 100	2200
100 - 200	1500
> 200	3200

~ 10,000 m³

Table showing concentration with depth in the lagoon, in addition to the volumes of current ash needed to be mixed with the contaminated ash to bring the concentration below 30 pCi/g.

Depth in cm	Average pCi/g U	Volume m ³	Vol (m ³) of ash needed to reach 30 pCi/g
0 - 50	12	3100	0
50 - 100	125	2500	10,000 - 12,600
100 - 160	540	1700	36,000 - 45,600
160 - 200	259	2700	25,700 - 32,500

current

Assuming:

- A total of 10,000 m³ ash in lagoon;
- a density for the ash ranging from 0.25 to 1.5 g/cc;
- current ash concentrations between 6 - 11 pCi/g;
- and a production rate for current ash of 20 tons/month;

- If entire lagoon were mixed the "average" concentration would be 146 pCi/g and it would take an estimated 48,000 to 61,000 m³ of current ash to bring concentration down to 30 pCi/g. (See also ATTACHMENT B)
- It could take between 60 to 250 years to dispose of all of the ash by blending with current ash. (See ATTACHMENT A)

KISKI VALLEY

CALCULATION WORKSHEET

SHEET

OF

PROJECT

CALCULATED BY

DATE

DOCKET NUMBER

SUBJECT

CHECKED BY

DATE

BASED ON
0.24 g Ask
cm³

$$20 \frac{\text{TONS}}{\text{MONTH}} * \frac{1E3 \frac{\text{kg}}{\text{TON}}}{1 \text{kg}}$$

$$* \frac{1 \text{cm}^3}{0.24 \text{g}} * \frac{1 \text{m}^3}{1E6 \text{cm}^3}$$

$$= 83.3 \frac{\text{m}^3}{\text{MONTH}}$$

$$60,000 \text{ m}^3 \div 83.3 \frac{\text{m}^3}{\text{MONTH}}$$

$$= 720 \text{ MONTH} \approx 60 \text{ years}$$

BASED ON
1.00 g
cm³

$$20 \frac{\text{TONS}}{\text{MONTH}} * \frac{1E3 \text{kg}}{\text{TON}} * \frac{1000 \text{g}}{1 \text{kg}}$$

$$* \frac{1 \text{cm}^3}{1.0 \text{g}} * \frac{1 \text{m}^3}{1E6 \text{cm}^3}$$

$$= 20 \frac{\text{m}^3}{\text{MONTH}}$$

$$60,000 \text{ m}^3 \div 20 \frac{\text{m}^3}{\text{MONTH}}$$

$$= 3000 \text{ MONTHS} \\ 250 \text{ years}$$