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CPSES-200202462
Log # TXX-02115

June 24, 2002

Ms. Ruth E. McBurney, CHP
Division Director
Licensing, Registration & Standards
Bureau of Radiation Control
Texas Department of Health
Austin, Texas 76133

SUBJECT: DISPOSAL OF EVAPORATOR POND SOLIDS AND SECONDARY SIDE PROCESS RESIN CONTAINING TRACE QUANTITIES OF RADIOACTIVE MATERIAL

Ref: (1) TXU Electric letter logged TXX-00215 from C. L. Terry to Ruth E. McBurney dated November 30, 2000.

(2) Texas Department of Health letter from Peter H. Myers to Scott Bradley dated February 20, 2001

Dear Ms. McBurney:

In the Reference 1 letter and attached application, TXU Electric, Comanche Peak Steam Electric Station (CPSES), requested the Bureau of Radiation Control's concurrence that slightly contaminated sanitary sewage cake containing trace quantities of radioactivity in concentrations below that contained in Title 25 of the Texas Administrative Code Section 289.202 was below regulatory concern and be allowed to be disposed in a Texas Class I Industrial Landfill. The Bureau of Radiation Control provided concurrence of TXU Electric's request in your letter identified in Reference 2.

TXU Generation Company LP (TXU Energy), formerly TXU Electric, now requests a similar concurrence from the Bureau of Radiation Control for disposal of CPSES

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evaporator pond solids and secondary side process resin wastes. As previously confirmed in your letter identified in Reference 2, approval for disposal of very low-level radioactive waste generated by NRC-licensed nuclear power plants located within Agreement States is within the regulatory jurisdiction of the Agreement State in which the waste is generated.

The attached application describes the material proposed for disposal and evaluates the potential dose impacts of disposal using guidance contained in Nuclear Energy Institute (NEI) Topical Report 97-02, "Technical Basis for Alternate Disposal Methods."

If you have any questions concerning this request or require additional information, please contact Mr. Scott Bradley, Health Physics Supervisor, at (254) 897-5494 or e-mail at sbradle1@txu.com.

Sincerely,

TXU Generation Company LP
By: TXU Generation Management Company LLC
Its General Partner

C. L. Terry
Senior Vice President and Principal Nuclear Officer

By: Roger D. Walker
Roger D. Walker
Regulatory Affairs Manager

CLW/clw

Attachment

c - E. W. Merschoff, Region IV w/att
W. D. Johnson, Region IV clo
D. H. Jaffe, NRR clo
Resident Inspectors, CPSES w/att
Stephen Klementowicz, NRR w/att

TXU Energy

Comanche Peak Steam Electric Station

Application for Disposal of Waste with Trace Levels of Radioactivity

1.0 INTRODUCTION

On November 30, 2000, TXU Electric, Comanche Peak Steam Electric Station (CPSES) requested the Bureau of Radiation Control's concurrence that slightly contaminated sanitary sewage cake containing trace quantities of radioactivity in concentrations below that contained in Title 25 of the Texas Administrative Code Section 289.202 was below regulatory concern. The Texas Department of Health, Bureau of Radiation Control, provided concurrence on February 20, 2001.

TXU Generation Company LP (TXU Energy), formerly TXU Electric, now requests a similar concurrence for slightly contaminated CPSES evaporator pond solids and secondary side process resin containing less than 5 picoCuries per gram radioactive contamination. As previously proposed for the contaminated sanitary sewage cake, TXU Energy intends to dispose of this material in a Texas Class 1 Industrial Landfill despite trace levels of radioactivity due to its negligible health impact on a member of the public.

2.0 WASTE DESCRIPTION

2.1 Physical Properties

The waste to be disposed of is secondary side resins and solids (soil, silt and vegetation) from the CPSES wastewater management system which collect on the bottom of various treatment system basins. The total current volume of the wastewater solids is approximately 450 yd^3 ; the secondary side resin waste accumulates at approximately 47 yd^3/yr (1260 ft^3 /yr).

2.2 Radiological Properties

Representative samples of the waste material were obtained and analyzed using Hyperpure Germanium scintillation detectors and gamma spectroscopy for a time sufficient to meet the Nuclear Regulatory Commission's requirements for environmental sample lower limits of detection (LLD). Attachment 1 details individual sample results.

The maximum concentrations and total radioactivity in the solids from the treatment system basins are as follows:

Radionuclide	Maximum Concentration	Total Radioactivity
Mn-54	0.02 pCi/gm	8.3 μCi
Co-60	0.35 pCi/gm	28.2 μCi
Cs-137	0.13 pCi/gm	37.9 μCi
		74.4 μCi

The average concentration and total radioactivity in the secondary system resin waste is:

Radionuclide	Concentration	Total Radioactivity
Mn-54	0.36 pCi/gm	20 μCi
Co-60	0.04 pCi/gm	2 μCi
		22 μCi

3.0 DISPOSAL IMPACTS

3.1 Dose Impacts

To evaluate the dose impact of disposal of this material, TXU Energy used the guidance contained in Nuclear Energy Institute (NEI) Topical Report 97-02, *Technical Basis for Alternate Disposal Methods*, May 1997. This NEI report used a modified version of the computer code IMPACTS-BRC (NUREG/CR-3585 and EPRI Report NP-5679). The assumptions used in the NEI Topical report for disposal in an offsite sanitary landfill include:

Region of the US	Southeast (Humid)
Contaminated Waste Mass	1090 metric tons/yr
Contaminated Waste Volume	100,000 ft^3/yr
Non-Contaminated Waste Mass	7500 metric tons/yr
Non-Contaminated Waste Volume	480,000 ft^3/yr
Transport Distance	40 miles
Average Truck Speed	25 miles/hr

The material currently accumulated and any future material to be disposed of is bounded by these assumptions (i.e., 12,000 ft^3 accumulated over 10 years or an estimated 1200 ft^3/yr vs. 100,000 ft^3/yr). Although transport distance to the landfill is greater than the NEI assumption used (40 miles vs. 70 miles from CPSES), the reduced number of shipments required results in less exposure time to a transport worker.

Based on the above assumptions, and the dose conversion factors found in the NEI Topical report, the material currently accumulated onsite would result in the following dose impacts:

Exposed Individual	**mrem/yr.**	
Transport Worker	0.1	
Landfill Worker	0.02	
Offsite Individual	5.7E-6	
Intruder	Agriculture	Construction
(Public Access Time, yrs)		
5	8.1E-02	1.6E-02
10	5.0E-02	1.1E-02
15	3.4E-02	6.5E-03
20	2.5E-02	6.5E-03
25	1.9E-2	4.0E-03
30	1.5E-2	2.0E-03

To independently verify the projected dose impacts obtained from using the NEI topical report methodology, computer code TSD-DOSE (ANL/EAD/LD-4) was used with material specific values (offsite landfill, 2 hours drive time, no rest & no maintenance). The code TSD-DOSE estimated dose to a driver (Transport Worker) of 0.1 mrem, which is comparable with the value obtained using the NEI methodology. Attachment 2 contains the dose detail from TSD-DOSE.

The dose impacts estimated in this application would not be measurable with state-of-the-art personnel dose monitoring instrumentation and are insignificant in comparison to the average annual dose received by an individual from natural sources (approximately 300 mrem per year). The dose impacts are far below all state and federal standards for dose to members of the public.

In the request for concurrence to dispose of sewer sludge dated November 30, 2000, TXU Electric committed to limit any disposal of contaminated sludge to less than 5 pCi/gm or 1.0 mrem to the maximally exposed individual (Transport Worker). TXU Energy proposes to follow these same limits for this request. The material related to this request is a factor of ten (10) less than these limits for both activity concentration and possible dose impact.

3.2 Soil Contamination Impacts

No significant potential for contamination of soil in unrestricted areas by the radionuclides described in this application is expected. This statement is based on a comparison to existing State standards on soil contamination limits for selected radionuclides (25 TAC, Part 289.202, and subsection (ggg) (8)). The State soil contamination limit for Co-60 and Cs-137 is 300 pCi/gm and 40 pCi/gm, respectively. The maximum concentration of these same radionuclides in this waste material is 2 to 3 orders of magnitude lower, i.e., 0.35 pCi/gm and 0.13 pCi/gm respectively.

Mn-54 is not specifically listed in subsection ggg (8), but since it's Annual Limit of Intake (ALI) and limits in effluents are a factor of 10 higher than for Co-60, it can be assumed that the limit value for Co-60 of 300 pCi/gm would envelop the risk associated with Mn-54. At 0.36 pCi/gm, the contamination from Mn-54 is approximately 3 orders of magnitude less than the State soil contamination limit on Co-60.

4.0 RECORDS

Records of gamma spectroscopy results and volumes released will be maintained at CPSES in accordance with station procedures and Nuclear Regulatory Commission requirements.

5.0 SUMMARY

The slightly contaminated Wastewater solids and secondary system resins may be disposed of in an industrial landfill with insignificant radiological impact to any member of the public or the environment. By allowing disposal of this material in a Class 1 Industrial Landfill, significant cost savings would be achieved.

6.0 REFERENCES

NEI-97-02, *Technical Basis for Alternate Disposal Requests*, Nuclear Energy Institute

ANL/EAD/LD-4, *TSD-DOSE: A Radiological Dose Assessment Model for Treatment, Storage and Disposal Facilities.*

U.S. Nuclear Regulatory Commission Information Notice 83-05, *Obtaining Approval for Disposal of Very Low-Level Radioactive Waste - 10 CFR 20.302.*

U.S. Nuclear Regulatory Commission Information Notice 86-90, *Requests to Dispose of Very Low-Level Radioactive Waste Pursuant to 10 CFR 20.302.*

U.S. Nuclear Regulatory Commission Information Notice 88-22, *Disposal of Sludge from Onsite Sewage Treatment Facilities at Nuclear Power Stations.*

TXU Electric letter TXX-00215 from C. L. Terry to Ruth E. McBurney dated November 30, 2000

Texas Department of Health letter from Peter H. Myers to Scott Bradley dated February 20, 2001.

Attachment 1

Radionuclides in CPSES Waste Water Solids

Sample Number	Mn-54 (pCi/gm)	Co-60 (pCi/gm)	Cs-137 (pCi/gm)	Material	Volume
010730004	0.020	0.043	0.073	Basin B	340 yd^3
010730007	< LLD	0.353	0.130	New API Separator	24 yd^3
010730006	< LLD	< LLD	0.037	Equalization Basin	85 yd^3
020222010	0.361	0.035	< LLD	SGBD Resin	47 yd^3

Attachment 2

TSD-DOSE: A Radiological Dose Assessment Model for Treatment, Storage, and Disposal Facilities

Version 2.22 - September 1998

Site: Comanche Peak Steam Electric Station
Shipment: Waste Water Solids & Secondary Resin
User: Scott E. Bradley
Title: Health Physics Supervisor

	TOTAL	EXTERNAL	INTERNAL
Dose to:			
Driver:	8.6E-02 mrem	8.6E-02 mrem	0.0E+00 mrem
Receiving worker:	not applicable	not applicable	not applicable
Incineration worker:	not applicable	not applicable	not applicable
Landfill worker:	not applicable	not applicable	not applicable
Offsite individual:	not applicable	not applicable	not applicable
Offsite population:	not applicable	not applicable	not applicable
Worker Population:	8.6E-05 p-rem	8.6E-05 p-rem	0.0E+00 p-rem
Dose from:			
Transport to TSD facility:	5.9E-02 mrem	5.9E-02 mrem	not applicable
Receiving and sampling waste:	not applicable	not applicable	not applicable
Storage before processing:	not applicable	not applicable	not applicable
Incineration of waste:	not applicable	not applicable	not applicable
Burial at onsite landfill:	not applicable	not applicable	not applicable
Transport to offsite landfill:	2.8E-02 mrem	2.8E-02 mrem	0.0E+00 mrem
Incinerator maintenance:	not applicable	not applicable	not applicable

Doses due to each isotope (mrem - population dose in p-rem).

Isotope	Co60	Cs137+D	Mn54
Activity	2.8E-05 Ci	3.8E-05 Ci	2.0E-05 Ci
Release Fraction	1.00E-02	2.00E-03	2.00E-03
Driver	5.7 E-02	1.7 E-02	1.3 E-02
Receiving worker	not applicable		
Incineration worker	not applicable		
Landfill worker	not applicable		
Offsite individual	not applicable		
Offsite population	not applicable		
Worker population	5.7 E-05	1.7 E-05	1.3 E-05

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