

EFFLUENT AND WASTE DISPOSAL SEMI ANNUAL REPORT  
October 15, 1979 - December 31, 1979  
SUPPLEMENTAL INFORMATION

FACILITY TMI Unit II, Epicor II LICENSEE DPR-73-320

1. Regulatory Limits

- a. Fission and activation gases:
- b. Iodines:
- c. Particulates, half-lives > 8 days: Environmental Tech Specs,  
Article 2.3
- d. Liquid effluents:

2. Maximum Permissible Concentrations

Provide the MPCs used in determining allowable release rates or concentrations.

- a. Fission and activation gases:
- b. Iodines:
- c. Particulates, half-lives 8 days: 10 CFR, Part 20, Appendix B
- d. Liquid effluents:

3. Average Energy

Provide the average energy ( $\bar{E}$ ) of the radionuclide mixture in releases of fission and activation gases, if applicable  $\pm 0.253$  MeV

4. Measurements and Approximations of Total Radioactivity

Provide the methods used to measure or approximate the total radioactivity in effluents and the methods used to determine radionuclide composition.

- a. Fission and activation gases: Ge(Li) Spectrometry, Liquid Scintillation
- b. Iodines: Ge(Li) Spectrometry
- c. Particulates: Ge(Li) Spectrometry, Gas Flow Proportional
- d. Liquid effluents: Ge(Li) Spectrometry, Liquid Scintillation

5. Batch Releases

Provide the following information relating to batch releases of radioactive materials in liquid and gaseous effluents.

A. Liquid                      No Batch Releases in 1979

- 1. Number of batch releases:
- 2. Total time period for batch release:
- 3. Maximum time period for a batch release:
- 4. Average time period for batch releases:
- 5. Minimum time period for a batch release:
- 6. Average stream flow during periods of release of effluent into flowing stream:

5. Batch Releases (cont.)

B. Gaseous                      No Batch Releases in 1979

1. Number of batch releases:
2. Total time period for batch releases:
3. Maximum time period for a batch release:
4. Average time period for batch release:
5. Minimum time period for a batch release:

6. Abnormal Releases        None

A. Liquid

1. Number of releases:
2. Total activity released:

B. Gaseous

1. Number of releases:
2. Total activity released:

TABLE 1A  
EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT  
GASEOUS EFFLUENTS-SUMMATION OF ALL RELEASES

	UNIT Epicor II	3rd QUARTER	4th QUARTER	EST. TOTAL ERROR, %
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A. Fission & activation gases

1. Total release	Ci	*	2.6E-1	2.5E1
2. Average release rate for period	μCi/sec.	N/A	3.30E-2	Tech Spec Limit = 20% of 2.4E4 m <sup>3</sup> /sec = 4.8E3 m <sup>3</sup> /sec = 1.44E3 μCi/sec for Kr-85
3. Percent of Tech Spec limit	%	N/A	2.29E-3	

B. Iodines

1. Total Iodine-131	μCi/cc	*	<1E-13	2.5E1
2. Average release rate for period	μCi/sec.	N/A	N/A	Tech Spec Limit = 20% of 0.024 μCi/sec = 0.0048 μCi/sec
3. Percent of Tech Spec limit	%	N/A	N/A	

C. Particulates

1. Particulates with half-lives > 8 Days	Ci	*	2.64E-5	2.5E1
2. Average release rate for period	μCi/sec.	N/A	3.35E-6	Tech Spec Limit = 20% of 0.024 μCi/sec = 0.0048 μCi/sec
3. Percent of Tech Spec limit	%	N/A	N/A	
4. Gross alpha radioactivity	Ci	*	4.1E-9	

D. Tritium

1. Total release	μCi/cc	*	<1E-6	2.5E1
2. Average release rate for period	μCi/sec.	N/A	N/A	Tech Spec Limit = 20% of 2.4E4 m <sup>3</sup> /sec = 4.8E3 m <sup>3</sup> /sec = 1.44E3 μCi/sec for Kr-85
3. Percent of Tech Spec limit	%	N/A	N/A	

\*\*Epicor II started operation in October, 1979; therefore, there were no releases in the third quarter of 1979.

Note (1) - all less than (<) numbers are the LLD concentration in units of μCi/cc.

TABLE 1B  
EFFLUENT AND WASTE DISPOSAL SEMI-ANNUAL REPORT  
GASEOUS EFFLUENTS-GROUND LEVEL RELEASE

Nuclides Released	UNIT Epicor II	Continuous Mode		Batch Mode	
		3rd QUARTER	4th QUARTER	3rd QUARTER	4th QUARTER

1. Fission gases - Note (1)

No Batch Releases  
in 1979

krypton-85	Ci	*	2.6 E-1				
krypton-85m	µCi/cc	*	<4E-8				
krypton-87	µCi/cc	*	<4E-8				
krypton-88	µCi/cc	*	<2E-7				
xenon-133	µCi/cc	*	<1E-7				
xenon-135	µCi/cc	*	<3E-8				
xenon-135m	µCi/cc	*	<4E-8				
xenon-138	µCi/cc	*	<5E-8				
Others (specify)	Ci						
	Ci						
	Ci						
	Ci						
	Ci						
Unidentified	Ci						
Total for period	Ci	*	2.6E-1		↓		↓

2. Iodines

iodine-131	µCi/cc	*	<1E-13				
iodine-133	µCi/cc	*	<1E-13				
iodine-135	µCi/cc	*	<1E-12				
Total for period	µCi/cc	*			↓		↓

\* Epicor II started operation in October 1979. Therefore, there were no releases in the third quarter of 1979.

TABLE 1B (cont.)  
 EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT  
 GASEOUS EFFLUENTS-GROUND LEVEL RELEASES

Nuclides Released	UNIT Epicor II	Continuous Mode		Batch Mode	
		3rd QUARTER	4th QUARTER	3rd QUARTER	4th QUARTER

3. Particulates - Note (1)

No Batch Releases  
in 1979

strontium-89	Ci	*	1.71E-7		
strontium-90	Ci	*	1.75E-8		
cesium-134	µCi/cc	*	<1E-16		
cesium-137	µCi/cc	*	<1E-16		
barium-lanthanum-140	µCi/cc	*	<1E-15		
Others (specify)					
Unidentified			2.62E-5		

\* Epicor II started operation in October 1979. Therefore, there were no releases in the third quarter of 1979.

TABLE 2A  
EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT  
LIQUID EFFLUENTS-SUMMATION OF ALL RELEASES

There were no Liquid releases in 1979	UNIT Epicor II	QUARTER	QUARTER	EST. TOTAL ERROR %
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A. Fission and activation products

1. Total releases (not including tritium, gases, alpha)	Ci			
2. Average diluted concentration during period	μCi/ml			
3. Percent of applicable limit	%			

B. Tritium

1. Total release	Ci			
2. Average diluted concentration during period	μCi/ml			
3. Percent of applicable limit	%			

C. Dissolved and entrained gases

1. Total release	Ci			
2. Average diluted concentration during period	μCi/ml			
3. Percent of applicable limit	%			

D. Gross alpha radioactivity

1. Total release	Ci			
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E. Volume of waste released (prior to dilution)	liters			
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F. Volume of dilution water used during period	liters			
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TABLE 2B  
 EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT  
 LIQUID EFFLUENTS  
 There were no releases of Liquid from Epicor II in 1979

Nuclides Released	UNIT Epicor II	Continuous Mode		Batch Mode	
		QUARTER	QUARTER	QUARTER	QUARTER
strontium-89	Ci				
strontium-90	Ci				
cesium-134	Ci				
cesium-137	Ci				
iodine-131	Ci				
cobalt-58	Ci				
cobalt-60	Ci				
iron-59	Ci				
zinc-65	Ci				
managanese-54	Ci				
chromium-51	Ci				
zirconium-niobium-95	Ci				
molybdenum-99	Ci				
technetium-99m	Ci				
barium-lanthanum-140	Ci				
cerium-141	Ci				
Other (specify)	Ci				
	Ci				
	Ci				
	Ci				
	Ci				
	Ci				
	Ci				
	Ci				
Unidentified	Ci				
Total for period	Ci				
xenon-133	Ci				
xenon-135	Ci				

TABLE 3A  
EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT  
SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

There were no shipments of radioactive material from Epicor II in 1979

A. Solid waste shipped off-site for burial or disposal (not irradiated fuel)

1. Type of waste	UNIT Epicor II	6 month period	EST. TOTAL ERROR %
a. Spent resins, filter sludges, evaporator bottoms, etc.	m <sup>3</sup> Ci		
b. Dry compressible waste, contaminated equipment, etc.	m <sup>3</sup> Ci		
c. Irradiated components, control rods, etc.	m <sup>3</sup> Ci		
d. Other (describe)	m <sup>3</sup> Ci		

2. Estimate of major nuclide composition (by type of waste)		
a.	%	
	%	
	%	
	%	
b.	%	
	%	
	%	
	%	
	%	
c.	%	
	%	
	%	
	%	
	%	
d.	%	
	%	
	%	
	%	

3. Solid Waste Disposition Number of Shipments	Mode of Transportation	Destination

B. Irradiated Fuel Shipments (Disposition)

Number of Shipments	Mode of Transportation	Destination