

### 5.1 Gamma Radiation

External radiation dose from on-site sources and noble gases released to the atmosphere was measured at ten indicator and four reference (background) locations using solid lithium fluoride thermoluminescent dosimeters (TLD). A comparison of the TLD results for reference stations with on-site and off-site indicator stations is included in Table 5.1-1. Additional TLDs, a total of 48 were installed on June 1, 1980 such that each sector was covered at both five miles and the site boundary.

### 5.2 Airborne I-131 and Particulate Radioactivity

Concentrations of airborne I-131 and particulate radioactivity at monitoring locations are summarized in Tables 5.0-2 through 5.0-6. Locations of the samplers are shown in Figure 5.0-1. Airborne I-131 remained below the LLD of 0.1 pCi/m<sup>3</sup> throughout the year.

Gross beta concentrations ranged from 0.010 to 0.053 pCi/m<sup>3</sup> at indicator locations and 0.010 to 0.056 pCi/m<sup>3</sup> at control locations with an average concentration of 0.025 both at indicator and control locations. No radioactivity attributable to station operation was detected in any sample.

### 5.3 Terrestrial Radioactivity

Precipitation samples were collected monthly from four milk sampling locations and analyzed for gross beta, tritium, strontium-89 and -90, and gamma-emitting isotopes. Except for gross beta, all other radioactivity was below the limits of detection indicating that there was no measurable amount of radioactivity attributable to the station releases.

Annual mean gross beta concentration measured 29.1 pCi/l, which is the level expected in precipitation samples.

Vegetables were collected in August and analyzed for gross beta, strontium-89 and -90, and gamma-emitting isotopes. In addition, green leafy vegetables were analyzed for iodine-131. Gross beta concentration ranged from 1.1 to 5.5 pCi/g wet weight and averaged 2.5 pCi/g wet weight. The range and mean values were those expected in the vegetation samples. All other isotopes were below the limits of detection indicating that there was no measurable amount of radioactivity attributable to the station releases.

Cattlefeed and grass samples were collected quarterly from milk sampling locations and analyzed for gross beta, strontium-89 and -90 and gamma-emitting isotopes. Except for gross beta, the level of radioactivity was below the detection limits. Gross beta concentrations were at the level usually encountered in these samples.

# STANDARD RADIOLOGICAL SAMPLING PROGRAM

## LaSalle County Station

### 1. AIR SAMPLERS

<u>Site Code</u>	<u>Location</u>	<u>Distance (miles)</u>	<u>Direction (°)</u>
L-01	a. Near-site #1	0.5	326
L-02	b. On-site Station #2	0.6	11
L-03	c. On-site Station #3	0.2	56
L-04	d. Near-site #4	1.5	90
L-05	e. On-site Station #5	0.3	145
L-06	f. Near site #6	0.4	270
L-07	g. Seneca	5.2	18
L-08	h. Marseilles	7.0	326
L-09	i. Grand Ridge (C)	10.4	260
L-10	j. Streater (C)	13.5	220
L-11	k. Ransom	6.0	191
L-12	l. Kernan (C)	5.0	214
L-13	m. Route 6 at Gonnam Road	4.3	100
L-14	n. Ottawa (C)	12.0	315

### 2. TLDs

a. Same as No. 1.

b. Special TLD Samplers

<u>Site Code</u>	<u>Distance (mile)</u>	<u>Direction (°)</u>
107 1,2	0.5	146
108 1,2	0.4	168
109 1,2	0.4	187
110 1,2	0.5	204
111 1,2	0.5	230
112 1,2	0.4	260
113 1,2	0.4	280
114 1,2	0.5	304
201 1,2	2.0	15
202 1,2	2.3	33
203 1,2	4.0	56
204 1,2	3.5	78
205 1,2	3.5	102

# STANDARD RADIOLOGICAL SAMPLING PROGRAM

## LaSalle County Station

### 2. TLDs

#### b. Special TLD Samplers (continued)

<u>Site Code</u>	<u>Distance (mile)</u>	<u>Direction (°)</u>
206 1,2	4.3	123
207 1,2	4.5	146
208 1,2	4.5	170
209 1,2	4.0	192
210 1,2	3.3	216
211 1,2	4.5	240
212 1,2	4.0	261
213 1,2	3.8	283
214 1,2	2.0	303
215 1,2	2.0	330
216 1,2	1.5	350

### 3. MILK

<u>Site Code</u>	<u>Location</u>	<u>Distance (miles)</u>	<u>Direction (°)</u>
L-15	a. Granby Farm*	7.0	90
L-16	b. Lowery Dairy	7.2	120
L-17	c. Norsen Dairy (C)	9.0	337
L-18	d. Sunnyisle Farm (C)	13.2	15

### 4. FISH

<u>Site Code</u>	<u>Location</u>	<u>Distance (miles)</u>	<u>Direction (°)</u>
L-35	a. Marseilles Pool of Illinois River	6.5	326
L-24	b. LSCS Cooling Lake	0.3	112

\* Granby Farm replaced Johnson Dairy 4-20-84.

# STANDARD RADIOLOGICAL SAMPLING PROGRAM

## LaSalle County Station

### 5. SURFACE WATER

<u>Site Code</u>	<u>Location</u>	<u>Distance (miles)</u>	<u>Direction (°)</u>
L-19	a. Illinois River at Marseilles	6.5	326
L-20	b. Illinois River at Ottawa	6.5	304
L-21	c. Illinois River at Seneca (C)	4.0	22
L-22	d. South Kickapoo Creek	4.7	330
L-23	e. Illinois Nitrogen Corp.	5.3	337
L-24	f. LSCS Cooling Lake near Recreation Area	0.3	112

### 6. COOLING WATER

<u>Site Code</u>	<u>Location</u>	<u>Distance (miles)</u>	<u>Direction (°)</u>
L-25	a. LSCS Intake Pipe/ River (C)	4.8	10
L-26	b. LSCS Discharge Pipe/ River	4.8	11

### 7. WELL WATER

<u>Site Code</u>	<u>Location</u>	<u>Distance (miles)</u>	<u>Direction (°)</u>
L-27	a. LSCS On-site Well	At Station	180
L-28	b. Marseilles Well	7.0	326
L-29	c. Seneca Well (C)	5.1	18
L-30	d. Ranson Well	6.0	191
L-31	e. Ottawa Well	12.8	304
L-32	f. Illinois State Park	6.5	326

Table 5.0-2

## LaSalle County Radiological Monitoring Program, Sample Collection and Analyses

Sample Media	Location Code	Site	Collection Frequency	Type of Analysis	Frequency of Analysis	Remarks
1. Airborne Particulates	L-1	Nearsite No. 1	Weekly	Gross beta Gamma Isot Sr-89,90	Weekly Quarterly Quarterly	On all samples. On quarterly composites from each location. On quarterly composites from each location.
	L-2	Onsite No. 2				
	L-3	Onsite No. 3				
	L-4	Nearsite No. 4				
	L-5	Onsite No. 5				
	L-6	Nearsite No. 6				
	L-7	Seneca				
	L-8	Marseille				
	L-9	Grand Ridge				
	L-10	Streator				
	L-11	Ransom				
	L-12	Kernan				
	L-13	Route 6 at Gonnard Rd.				
	L-14	Ottawa				
2. Airborne Iodine	Same as 1.		Weekly	I-131	Weekly	On all samples.
3. TLD	Same as 1.		Quarterly	Gamma	Quarterly	Two sets at all AP locations. One set read quarterly. Second set read if required by Edison. At other locations, all sets read quarterly.
	107-14	Inner Ring				
	201-16	Outer Ring				
4. Milk	L-15	Johnson Dairy*	Weekly: Apr to Sep Monthly: Oct to Mar	I-131 Gamma Isot Sr-89,90	Weekly Monthly Monthly	May thru October only. LLD: 0.5 pCi/l
	L-16	Lowery Dairy				
	L-17	Norsen Dairy				
	L-18	Sunnyisle Farm				
5. Surface Water	L-19	Illinois River at Marseilles	Weekly	Gross beta Gamma Isot Tritium Sr-89,90	Weekly Monthly Quarterly Quarterly	On all samples. On monthly composites from each location. On quarterly composites from each location. On quarterly composites from each location.
	L-20	Illinois River at Ottawa				
	L-21	Illinois River at Seneca				
	L-22	South Kickapoo Creek				
	L-23	Illinois River at Intake to Nitrogen Corp.				
	L-24	LSCS Cooling Lake near Rec. area				
6. Cooling Water	L-25	LSCS intake pipe/river	Weekly	Gross beta Gamma Isot Tritium Sr-89,90	Weekly Monthly Monthly Monthly	On all samples. On monthly composites from each location. On monthly composites from each location. On monthly composites from each location.
	L-26	LSCS discharge pipe/river				

\* Granby Farm replaced Johnson Dairy effective 4-20-84.

# REPORTING LEVELS FOR RADIOACTIVITY CONCENTRATIONS IN ENVIRONMENTAL SAMPLES

## Reporting Levels

Analysis	Water (pCi/l)	Airborne Particulate or Gases (pCi/m <sup>3</sup> )	Fish (pCi/Kg, wet)	Milk (pCi/l)	Food Products (pCi/Kg, wet)
H-3	2 x 10 <sup>4(a)</sup>				
Mn-54	1 x 10 <sup>3</sup>		3 x 10 <sup>4</sup>		
Fe-59	4 x 10 <sup>2</sup>		1 x 10 <sup>4</sup>		
Co-58	1 x 10 <sup>3</sup>		3 x 10 <sup>4</sup>		
Co-60	3 x 10 <sup>2</sup>		1 x 10 <sup>4</sup>		
Zn-65	3 x 10 <sup>2</sup>		2 x 10 <sup>4</sup>		
Zr-Nb-95	4 x 10 <sup>2</sup>				
I-131	2	0.9		3	1 x 10 <sup>2</sup>
Cs-134	30	10	1 x 10 <sup>3</sup>	60	1 x 10 <sup>3</sup>
Cs-137	50	20	2 x 10 <sup>3</sup>	70	2 x 10 <sup>3</sup>
Ba-La-140	2 x 10 <sup>2</sup>			3 x 10 <sup>2</sup>	

(a) For drinking water samples. This is 40 CFR Part 141 value.



