

INSPECTION REPORT NO. 77-01

Attached

Appendix A

Appendix B

Appendix C

Memo 1 & 2

Union Carbide Corporation
Chemicals and Plastics - Measurements & Control Technology
P.O. 8361, South Charleston, West. VA. 25303

Licensee contact: C.R. Landfried Telephone no. 304-747-5414

License no. 47-00260-02 Last amendment and date: #35, dated 4-4-77

Category: C, and Priority: TV, as of last amendment.

Inspection date(s): May 12, 1977 Type of inspection: Routine Unannounced

SUMMARY OF FINDINGS AND ACTION

- No noncompliance, clear 591 issued
- Noncompliance, Appendix A
- Action on previous noncompliance, Appendix B
- Noncompliance, 591 issued
- Regional action Hq action
- Supplemental info, Appendix C

RECOMMENDATIONS

See basis in Appendix C or attached memo.

- Change Category to: NA
- Change Priority to: NA
- Next inspection date: 5-80

PERSONS CONTACTED

- C.R. Landfried - R.P.O.
- R.V. Sealy - alternate RPO
- D.B. Allport - R.P. Technologist
- M. Cameron - Lab Supervisor - Muscimol Lab

Inspector: Richard D. Woodruff 5/18/77

Approved: J.B. Kable 5/13/77

Plan approved: _____

Date: 5-12-77Licensee: Union Carbide Corporation
Charleston, West VA.License no: 47-07260-02

Inspection Items	Scheduled for inspection	Post-inspection status	Module no.	766 Time Info
Management meeting - Entrance and Exit Interviews [REQUIRED]	✓		30703B	30 min
Initial Management Meeting				
Program requirements, MC 28.50 [REQUIRED]	✓		77710B	2 hours
Licensee Event Followup			92700B	
Followup on Inspector-identified problems			92701B	
Followup on Noncompliance and Deviations			92702B	
IE Bulletin/Immediate Action Letter Followup			92703B	
Followup on Headquarters Requests			92704B	
Followup on Regional Requests			92705B	
Independent Inspection Effort [REQUIRED]	N/A			30 min
Inspector Dispatched to Site			93700B	
Followup on Significant Event Occurring During Inspection			93701B	

AREAS INSPECTED AND FINDINGS

Licensee: Union Carbide Corporation License no: 47-00260-02 Amendment no: 35

INSPECTION ITEMS	CRITERIA	FINDING
<p><u>1. Organization</u> Management organization. <u>OK</u> Radiation protection organization. <u>OK</u></p>	<p>Lic Cond _____</p>	<p><u>OK</u></p>
<p>NOTES & REMARKS: <i>See attached memo 1</i></p>		
<p><u>2. Licensee internal audits</u> Scope and frequency. <u>NA</u> Management controls. <u>OK</u></p>	<p>Lic Cond _____</p>	<p><u>OK</u></p>
<p>NOTES & REMARKS: <i>see organizational chart for group that gives contract to Instrumentation Division for Health Physics activities and authorization</i></p>		
<p><u>3. Training and instructions to employees</u> Training program, scope and frequency, formal retraining. <u>40 hr. training program</u> Required tests administered; scores satisfactory. <u>✓</u> Instructions to workers. <u>✓</u></p>	<p>Lic C Lic Cond _____ 19.12</p>	<p><u>OK</u></p>
<p>NOTES & REMARKS:</p>		
<p><u>4. Radiation protection procedures</u> Operating & emergency procedures implemented. <u>OK</u> Security. <u>OK</u></p>	<p>Lic Cond _____ 20.207</p>	<p><u>OK</u></p>
<p>NOTES & REMARKS: <i>Procedures are updated each year - copies available to employees.</i></p>		

AREAS INSPECTED AND FINDINGS

Licensee: Union Carbide License no: 47-06260-02 Amendment no: 35

INSPECTION ITEM	CRITERIA	FINDING
5. Materials, facilities and instruments <u>OK</u>		
Authorized uses and quantities. <u>OK</u>	Lic Cond _____	
Restricted areas, posting requirements. <u>✓</u>	20.203	
Survey instruments & dosimeters; operable, properly calibrated. <u>✓</u>	Lic Cond _____	
NOTES & REMARKS: <i>see attached inventory of sources (Memo 2) see inventory of instrumentation on back of page 3</i>		
6. Receipt and transfer of materials <u>OK</u>		
Procedures implemented, adequate. <u>OK</u>	20.205, 71.51	
Transfer of byproduct material. <u>OK</u>	30.41	
Labeling and packaging.	71.5, 49CFR 170-189	
Records of receipt, transfer, storage, survey, and monitoring. <u>OK</u>	30.51	
NOTES & REMARKS: <i>files are complete for receipt, use, leak test, transfer, surveys and disposal of sources.</i>		
7. Personnel protection - external <u>OK</u>		
Personnel monitoring control; minimize exposures, control of accumulated dose. <u>✓</u>	20.101, 20.102, 20.202	
Surveys conducted, adequate. <u>✓</u>	20.201	
Records of monitoring, surveys, disposals.	20.401, Lic Cond _____	
Levels in unrestricted areas. <u>OK</u>	20.1, 20.105	
NOTES & REMARKS: <i>Lundgren film badge service (2 wk frequency) max annual exposure = 110 mrem/year 12 persons monitored as above</i>		
8. Personnel protection - internal <u>OK</u>		
Airborne concentrations in restricted areas. <u>NA</u>	20.103	
Exposure of minors. <u>None</u>	20.104	
Posting of airborne radioactivity areas. <u>NA</u>	20.203	
Survey, monitoring requirements; records. <u>NA</u>	20.201, 20.401	
Leak tests of sealed sources. <u>OK</u>	Lic Cond _____	
NOTES & REMARKS:		

AREAS INSPECTED AND FINDINGS

Licensee: Union Carbide Corp. License no: 47-00260-02 Amendment no: 35

INSPECTION ITEM	CRITERIA	FINDING
<u>9. Effluent control, waste disposal.</u>		<u>OK</u>
Release of effluents. <u>NA</u>	20.106	
Waste disposal. <u>OK</u>	20.301, 20.303, 20.304, 20.305	
Procedures, records. <u>OK</u>	20.401, Lic Cond _____	

NOTES & REMARKS:

All waste disposal is sent through commercial company.

<u>10. Shipping, shipping incidents</u>		<u>OK</u>
Procedures for pickup, receipt, monitoring of packages. <u>OK</u>	20.205(b) & (c)	
Transportation of licensed material. <u>OK</u>	71.5	
Incidents, reports, corrective actions. <u>none</u>	49CFR 170-189	

NOTES & REMARKS:

<u>11. Notifications and reports</u>		<u>OK</u>
To individuals. <u>routine OK</u>	19.13	
Overexposures, excessive levels & concentrations, incidents. <u>none</u>	20.403, 20.405	
Personnel exposures and monitoring, termination reports. <u>none</u>	20.407, 20.408	
Theft or loss of licensed material. <u>none</u>	20.402	

NOTES & REMARKS:

<u>12. Posting of notices</u>		<u>OK</u>
Part 20, license & documents, procedures, notice of violations. <u>✓</u>	19.11(a)	
NRC-3. <u>✓</u>	19.11(c)	

NOTES & REMARKS:

NRC-3 posted OK

AREAS INSPECTED AND FINDINGS

77710B - Industrial-Academic

Licensee: Union Carbide Corp. License no: 47-0026-02 Amendment no: 35

INSPECTION ITEM	CRITERIA	FINDING
13. <u>Environmental monitoring program</u>	Lic Cond _____	<u>MA</u>

Implementation of program, scope and frequency as required. MA
 Records maintained, reviewed by management. MA

NOTES & REMARKS:

14. <u>Emergency preparedness</u>	Lic Cond _____	<u>OK</u>
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Procedures available for incidents and accidents. OK
 Training for personnel; coordination with supporting groups and agencies. ✓

NOTES & REMARKS:

Personnel are trained formally before put on line then possibly rehearsed

15. <u>Other license conditions</u>	Lic _____	<u>OK</u>
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NOTES & REMARKS:

Reviewed all license conditions

16. <u>Confirmatory measurements</u>	_____	_____
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Licensee's surveys verified on sampling basis. 20.105, 20.201

NOTES & REMARKS:

see below

17. <u>Independent inspection effort</u> (records)	_____	<u>OK</u>
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Initial surveys were not available for the cesium-137 calibration source; therefore, the licensee was instructed to "set up a typical calibration procedure and surveys were performed outside the shielded area where persons would normally be during calibration activities. No one would qualify for a radiation area. Note that the entire area is restricted.

Union Carbide

Corporate V.P.

(5000 People)

Chemicals

Plastics

Engineering (2000)

R.D. Steep, Director

E.P./Occupational Health

Special

Instrumentation

Development
(Rad Mat)

Applications
(Rad Mat)

SPECIAL INSTRUMENTATION
(SID)
D. L. GARRISON
*Associate Director
of Engineering*

R. S. JONES

DEVELOPMENT
Group Leader
R. V. SEALEY

MEASUREMENT ENGINEERING
AND SERVICES
T. E. GALLAGHER

APPLICATIONS ENGINEERING
C. R. LANDFRIED
~~R. C. LAWRENCE~~
Group Leader

AND SERVICES
T. E. Gallagher

STAFF ASSISTANT -
SPECIAL ASSIGNMENTS
W. R. Thompson

SECRETARY Wanda Myers

FABRICATION

G. B. LeRoy

M. D. Harper

E. R. Bailey
B. J. Hartley
H. F. Montgomery
P. E. Nunley
D. M. Siers

A. F. Skidmore

E. C. Bennett
P. M. Hutzler
D. T. Davis
R. C. Krebs
R. C. Sweeney

HOPS:

Model
Prototype
Electronics
Static Pressure Calibration
to 100,000 lbs/in²

ACOUSTICS AND
ENGINEERING MEASUREMENTS

TEST INSTRUMENT
CALIBRATION AND
REPAIR

J. C. Chapman

Standards Lab
Test Equipment

C. H. Davidson
R. H. Hudson
Linda Redd
L. F. Swann
J. K. Thompson

J. D. Steele

Dynamic Measurements:

Vibration Displacement-
Velocity-Acceleration
Strain Shock-Pressure
Pulsation-Force
Noise Surveys
Architectural Acoustics
Noise Control

Capital Projects
Existing Plant Problems
Community Noise Problems

Development of Special Silencers:
Visco-Elastic Dampening Systems
Acoustic Enclosures
Lagging Systems

OPERATIONS OFFICE

C. G. Carte
Beverly Jones
Norma Taylor
Mary Jean Wickert

Work Orders/TLSO
Accounting
Purchasing
Expediting
Shipping
Cost Library
Time Distribution
Central File System
Budget
Cost Feedback
Vehicles

GAS MIXING
LABORATORY

W. R. Jordan
E. M. Babcock
C. L. Nelson

Gravimetric and
Partial Pressure
Gas Samples
Chromatographic
Columns
Pilot Plant Feed
Stock
Calibration Samples

14/76

SPECIAL INSTRUMENTATION
APPLICATION ENGINEERING

C. Richards Fried
R. C. Lawrence

SECRETARY Kathy Starr

PROJECT, PLANT AND BUSINESS
TEAM COORDINATORS

ANALYTICAL LABORATORY

W. L. Bare

ELECTRONICS AND NUCLEONICS
LABORATORIES

M. E. Cavender

INSTALLATION

- W. M. Barrows - 510,526
- J. E. Reed - 515
- D. R. Pauley - 512,514
- A. L. Young - 511
- W. H. Wagner - 312
- J. M. Berry - 293, 312, Ohio Valley
- M. E. Carter - LDPE
- C. E. Dunn
- H. F. Bailey - HDPE

- J. E. Johnson
- S. F. Downs - 519,513
- J. S. Beeby
- R. E. Reiter

Jean Sealey - Training

Liaison and Consultation
Plant Working Budget
Capital Projects
Measurement Problems
Sample Systems
Special Instrumentation Training

- B. L. Beckett
- F. F. Campbell
- J. L. Chapman
- J. F. Cole
- J. W. Gardner
- R. A. Hastings
- L. W. Hatcher
- D. L. Huffman
- D. L. McTeer
- D. F. Osborne
- C. E. Parsons
- C. B. Peters
- D. R. Smith
- M. K. Wing

Customizing Commercial Equipment
Calibration of Process Analyzers
Chromatographic-Moisture-
Ultraviolet-Infra-red-Oxygen, etc.
Evaluation
Analyzers
Components
Field Service
Installation and Startup
Contract Service
Revisions and Repair

- J. A. Boggess
- L. B. Rodgers
- R. W. Stanton

Level
Density
Moisture

Capital Project
Plant Working
Budget
Field Service
Startup
Contract

Techs

SPECIAL INSTRUMENTATION
DEVELOPMENT

R. V. Sealey

SECRETARY Sharon Mulder

INSTRUMENT DEVELOPMENT

T. M. Austin

INSTRUMENT DEVELOPMENT

E. G. Trawick

INSTRUMENT DESIGN

C. R. Landfried

R&D COORDINATOR

G. A. Gillis

RADIATION
PROTECTION

M. C. Bowen
E. T. Carroll
H. Senman
R. C. Barker

~~M. L. Green~~

R. S. Berry
W. S. Kennedy →
B. C. Petersen

D. G. Allport

G. L. Baker
C. E. Frick
J. R. Moss
J. F. Petersen
E. G. Trawick
I. E. Williams
H. W. Withrow

*Air and Water Quality Monitoring
Industrial Hygiene Support*

R. D. Dillon
R. S. Calloway
F. A. Coon, III
J. F. Fisher
E. C. Lawson
T. O. Maki
S. T. Martin
P. P. Mierau
D. J. Beach
D. L. Brinkley
R. N. Peay
D. R. Spradling
A. R. Rogers

*Chemical
Mechanical
Electronic
Drafting*

*Nucleonic Development
Radiation Protection
Electrochemical
Optics
Physical Chemistry
Physical Methods
Chromatography*

Technical Center

memo 2

5/12/77

C. R. Landfried, Radiation Protection Officer

Identification Number	Radioactive Material	Millicurie (mCi)	Source Holder	Date of Purchase	Location
6901-25096 Am-601	Americium-241	.0001	Check Source	4/16/70	Monsanto Research Corp.
MRC-AmBe 1504	Americium-241	2390	15 gallon steel pot	10/9/74	Monsanto Research Corp.
2	Americium-241	1300		9/6/65	Nuclear Chicago
MRC-AmBe 2545	Americium-241 *	930 *	MRC Model 2722 *	10/13/75	Monsanto Research Corp.
6901-25068 722	Cobalt-60 *	1.0 *	Lead filled Steel Pot *	4/1/69	Tracer Lab
454	Cesium-137	0.5	RTSN Comp Cell	4/71	Ohmart Corp.
6901-25022 M-644	Cesium-137	0.5	Comp Cell	11/22/67	Ohmart Corp.
Calibration Source	Cesium-137	0.02	Calibration Source	7/73	-----
L-837	Cesium-137	0.10	RTSN Comp Cell	5/3/72	Ohmart Corp.
M-629	Cesium-137	0.10	RTSN Comp Cell	5/3/72	Ohmart Corp.
M-645	Cesium-137	0.5	RTSN Comp Cell	7/14/72	Ohmart Corp.
SO-16959 T-609	Cesium-137	.25	RTSN Comp Cell	1/4/68	Ohmart Corp.
6901-25092 1760	Cesium-137	100	SHRM-5	7/29/70	Ohmart Corp.
6901-25164 1525-A	Cesium-137	100	Kay Ray 7062	1/9/74	Kay Ray
6901-1A	Cesium-137	.00047	GM-8	8/11/75	Ohmart Corp.
6901-2A	Cesium-137	.00047	GM-8	8/11/75	Ohmart Corp.
6901-110	Cesium-137	.00047	GM-8	8/11/75	Ohmart Corp.
6901-25165 1525-B	Cesium-137	100	Kay Ray 7062	1/9/74	Kay Ray
6901-25032 511-29	Cesium-137	500	ASR-50-3	10/10/62	Ohmart Corp.
2570	Cesium-137	500	SHRM-60	1/4/77	Ohmart Corp.
65402	Cesium-137	100		11/10/76	Ohmart Corp.
2571	Cesium-137	500	SHRM-60	1/4/77	Ohmart Corp.
6901-25084 V-157	Cesium-137	150	SHRM-PA	12/29/67	Ohmart Corp.
2572	Cesium-137	500	SHRM-60	1/4/77	Ohmart Corp.
6901-25058	Cesium-137	0.5	Comp Cell	11/22/67	Ohmart Corp.

Technical Center

Identification Number	Radioactive Material	Millicurie (mCi)	Source Holder	Date of Purchase	Location
6234	Cesium-137	100	SHRM-PA	4/11/72	Ohmart Corp.
6901-25059	Cesium-137	50	SHRM-PA	2/9/67	Ohmart Corp.
6901-25006	Cesium-137	250	SHLM	1/4/68	Ohmart Corp.
6901-25052	Cesium-137	100	SHRM-5	4/14/66	Ohmart Corp.
6901-25051	Cesium-137	100	SHRM-5	7/21/65	Ohmart Corp.
6901-25050 USRC-236	Cesium-137	10	SHRM-PA	6/2/64	Ohmart Corp.
6238	Cesium-137	100	SHRM-PA	5/74	Ohmart Corp.
285	Cesium-137	200	NC-5192	1/7/74	Nuclear Chicago
214	Cesium-137	200	NC-5192	10/12/73	Nuclear Chicago
190	Cesium-137	200	NC-5192	9/14/73	Nuclear Chicago
197	Cesium-137	200	NC-5192	9/14/73	Nuclear Chicago
6365	Cesium-137	100	HM-8	8/10/73	Ohmart Corp.
6901-32 511-18	Cesium-137	50	SHRM-PA	12/60	Ohmart Corp.
6901-25036	Cesium-137	20		3/29/74	Ohmart Corp.
6901-69	Cesium-137	150	SHRM-PA	5/10/66	Ohmart Corp.
490	Cesium-137	200	TN-5192	2/5/75	Texas Nuclear Corp.
494	Cesium-137	200	TN-5192	2/5/75	Texas Nuclear Corp.
495	Cesium-137	200	TN-5192	2/5/75	Texas Nuclear Corp.
497	Cesium-137	200	TN-5192	2/5/75	Texas Nuclear Corp.
498	Cesium-137	200	TN-5192	2/5/75	Texas Nuclear Corp.
499	Cesium-137	200	TN-5192	2/5/75	Texas Nuclear Corp.
500	Cesium-137	200	TN-5192	2/5/75	Texas Nuclear Corp.
6267	Cesium-137	100	SHRM-PA	12/17/73	Ohmart Corp.
6901-70	Cesium-137	100	SHRM-P	5/60	Ohmart Corp.
505	Cesium-137	200	TN-5192	2/5/75	Texas Nuclear Corp.
508	Cesium-137	200	TN-5192	2/5/75	Texas Nuclear Corp.
6901-25093	Cesium-137	100	SHRM-PA	8/10/70	Ohmart Corp.
511	Cesium-137	200	TN-5192	2/5/75	Texas Nuclear Corp.
512	Cesium-137	200	TN-5192	2/5/75	Texas Nuclear Corp.
L-469	Cesium-137	100	SHRM-PA	12/4/75	Ohmart Corp.
520	Cesium-137	200	TN-5192	3/4/75	Texas Nuclear Corp.
6901-01	Cesium-137	100	SHRM-1	8/11/75	Ohmart

Technical Center

Identification Number	Radioactive Material	Millicurie (mCi)	Source Holder	Date of Purchase	Location
64154	Cesium-137	100	SHRM-PA	12/4/75	Ohmart Corp.
224	Cesium-137	200	NC-5192	10/12/73	Nuclear Chicago
526	Cesium-137	200	TN-5192	3/4/75	Texas Nuclear Corp.
527	Cesium-137	200	TN-5192	3/4/75	Texas Nuclear Corp.
230	Cesium-137	200	NC-5192	10/12/73	Nuclear Chicago
6901-25091 1759	Cesium-137	150	SHRM-8	7/29/70	Ohmart Corp.
531	Cesium-137	200	TN-5192	3/4/75	Texas Nuclear Corp.
532	Cesium-137	200	TN-5192	3/4/75	Texas Nuclear Corp.
534	Cesium-137	200	TN-5192	3/4/75	Texas Nuclear Corp.
535	Cesium-137	200	TN-5192	3/4/75	Texas Nuclear Corp.
536	Cesium-137	200	TN-5192	3/4/75	Texas Nuclear Corp.
537	Cesium-137	200	TN-5192	3/4/75	Texas Nuclear Corp.
539	Cesium-137	200	TN-5192	3/4/75	Texas Nuclear Corp.
540	Cesium-137	200	TN-5192	3/4/75	Texas Nuclear Corp.
541	Cesium-137	200	TN-5192	3/4/75	Texas Nuclear Corp.
6901-25081 1660	Cesium-137	100	SHRM-5	5/69	Ohmart Corp.
6901-18	Cesium-137	50	SHRM-5	9/29/75	Ohmart Corp.
6901-03	Cesium-137	50	SHRM-5	9/29/75	Ohmart Corp.
546	Cesium-137	200	TN-5192	3/4/75	Texas Nuclear Corp.
547	Cesium-137	200	TN-5192	3/4/75	Texas Nuclear Corp.
552	Cesium-137	200	TN-5192	3/4/75	Texas Nuclear Corp.
553	Cesium-137	200	TN-5192	3/4/75	Texas Nuclear Corp.
554	Cesium-137	200	TN-5192	3/4/75	Texas Nuclear Corp.
555	Cesium-137	200	TN-5192	3/4/75	Texas Nuclear Corp.
556	Cesium-137	200	TN-5192	3/4/75	Texas Nuclear Corp.
561	Cesium-137	200	TN-5192	3/4/75	Texas Nuclear Corp.
563	Cesium-137	200	TN-5192	3/4/75	Texas Nuclear Corp.
564	Cesium-137	200	TN-5192	3/4/75	Texas Nuclear Corp.
565	Cesium-137	200	TN-5192	3/4/75	Texas Nuclear Corp.
566	Cesium-137	200	TN-5192	3/4/75	Texas Nuclear Corp.
567	Cesium-137	200	TN-5192	3/4/75	Texas Nuclear Corp.
568	Cesium-137	200	TN-5192	3/4/75	Texas Nuclear Corp.
569	Cesium-137	200	TN-5192	3/4/75	Texas Nuclear Corp.

Technical Center

Identification Number	Radioactive Material	Millicurie (mCi)	Source Holder	Date of Purchase	Location
570	Cesium-137	200	TN-5192	3/4/75	Texas Nuclear Corp.
571	Cesium-137	200	TN-5192	3/4/75	Texas Nuclear Corp.
573	Cesium-137	200	TN-5192	3/4/75	Texas Nuclear Corp.
574	Cesium-137	200	TN-5192	3/4/75	Texas Nuclear Corp.
575	Cesium-137	200	TN-5192	3/4/75	Texas Nuclear Corp.
576	Cesium-137	200	TN-5192	3/4/75	Texas Nuclear Corp.
577	Cesium-137	200	TN-5192	3/4/75	Texas Nuclear Corp.
578	Cesium-137	200	TN-5192	3/4/75	Texas Nuclear Corp.
579	Cesium-137	200	TN-5192	3/4/75	Texas Nuclear Corp.
581	Cesium-137	200	TN-5192	3/4/75	Texas Nuclear Corp.
582	Cesium-137	200	TN-5192	3/4/75	Texas Nuclear Corp.
584	Cesium-137	200	TN-5192	3/4/75	Texas Nuclear Corp.
585	Cesium-137	200	TN-5192	3/4/75	Texas Nuclear Corp.
586	Cesium-137	200	TN-5192	3/4/75	Texas Nuclear Corp.
588	Cesium-137	200	TN-5192	3/4/75	Texas Nuclear Corp.
6901-25063 6779	Cesium-137	2000	HM-8	11/5/76	Ohmart Corp.
6901-25136 236C1-6A	Cesium-137	1000	SHRH-A	4/30/63	Ohmart Corp.
44542	Cesium-137	1500	ASR-50-2	5/64	Ohmart Corp.
2372	Cesium-137	4000	TN-5176	10/3/74	Texas Nuclear Corp.
6901-25054 6378	Cesium-137	1500	ASR-3	5/18/67	Ohmart Corp.
6901-25026 6749	Cesium-137	1000	SHLM-LG	12/3/68	Ohmart Corp.
6783	Cesium-137	2000	HM-8	12/29/67	Ohmart Corp.
6991	Cesium-137	1500	ASR-3	5/10/68	Ohmart Corp.
65524	Cesium-137	5000	SHLM	1/4/77	Ohmart Corp.
65602	Cesium-137	5000	SHLM	1/4/77	Ohmart Corp.
65603	Cesium-137	5000	SHLM	1/4/77	Ohmart Corp.
65604	Cesium-137	5000	SHLM	1/4/77	Ohmart Corp.
65605	Cesium-137	5000	SHLM	1/4/77	Ohmart Corp.
62153	Cesium-137	5000	SHLM	1/4/77	Ohmart Corp.
60476	Cesium-137	2000	SHRH-A	12/3/75	Ohmart Corp.

Technical Center

Identification Number	Radioactive Material	Millicurie (mCi)	Source Holder	Date of Purchase	Location
60410	Cesium-137	1500	SHRH-A	12/3/75	Ohmart Corp.
60409	Cesium-137	1500	SHRH-A	12/3/75	Ohmart Corp.
64949	Cesium-137	5000	SR-2	12/30/75	Ohmart Corp.
64950	Cesium-137	5000	SR-2	12/30/75	Ohmart Corp.
	*	*	*		
1269	Polonium-210	.500	Source for Static Meter		
	*	*	*		
234	Nickel-63	15	Chromatograph Cell	4/2/71	Bendix Corp.
	*	*	*		
6901-24	Radium-226	0.2	Model PT-101-T	4/18/58	Industrial Nucleonics
R-1	Radium-226	1.0	Leed Pot	1950-1960	US Radium Corp.
R-940	Radium-226	1.0 mg	Model B-20-25	7/31/74	CEIN-VAL-CO
R-4	Radium-226	0.5	Comp Cell	1963	Ohmart Corp.
R-6	Radium-226	2	Comp Cell	1963	---
R-10	Radium-226	0.15	Comp Cell	1963	---
R-11	Radium-226	2	Pellets	1963	---
R-13	Radium-226	1.6	Comp Cell	1963	---
R-44	Radium-226	.050	Comp Cell	---	Ohmart Corp.
R-35	Radium-226	0.1	Comp Cell	1964	Ohmart Corp.
R-40	Radium-226	0.1	GU-5	1967	---
3971	Radium-226	0.06	Chromatograph Cell	1968	Barber Coleman
Calibration Source	Radium-226	0.02	Calibration Source	1973	Packard Instrument Co.
RP1	Radium-226	9.0	Pellets	1963	---
RP2	Radium-226	10.0	Pellets	1962	---
R-19	Radium-226	5	Pellets	1963	---
R-605	Radium-226	1.3	---	1/21/76	CEIN-VAL-CO
	*	*	*		
6901-25075 S-1005	Strontium-90	1000	SH-1A	12/63	Numico
6901-25076 S-1006	Strontium-90	1000	SH-1A	12/63	Numico

Total Amount of Radioactive Material in each Location

Technical Center: (-2, -6, -9 licenses)

Americium-241	4620.0001	mCi
Cobalt-60	1.0	mCi
Cesium-137	75,832.4712	mCi
Polonium-210	.500	mCi
Nickel-63	15	mCi
Radium-226	34.08	mCi
Strontium-90	2000	mCi
Tritium	2020.0	mCi

(Other Plants have 5p licenses)

Institute:

Cesium-137	7620.0	mCi
Strontium-90	21.0	mCi

Marietta Plastics

Cesium-137	5750.0	mCi
Radium-226	1.0	mCi

Montreal:

Cesium-137	1000.5	mCi
Americium-241	950.0	mCi

Ponce:

Cesium-137	94,600.0	mCi
Americium-241	870.0	mCi

Seadrift:

Cesium-137	109,420.35	mCi
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South Charleston:

Cesium-137	10,601.5	mCi
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Taft:

Cesium-137	20,501.05	mCi
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Texas City:

Cesium-137	1700.0	mCi
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Torrance:

Cesium-137	1000	mCi
Strontium-90	40	mCi

Technical Center

Identification Number	Radioactive Material	Millicurie (mCi)	Source Holder	Date of Purchase	Location
TR-1002	Tritium	200	Tritium on Foil	1971	Custom Materials, Inc.
214	Tritium	220	Chromograph Cell	---	Barber Coleman
264	Tritium	300	---	---	---
146	Tritium	200	Source in Chromatograph	1973	E-C Detector-Aid, Inc.
162	Tritium	100	Electron Capture Detector System	4/16/75	Analog Technology Corp.
119	Tritium	1000	Electron Capture Detector	9/12/75	Analog Technology Corp.