


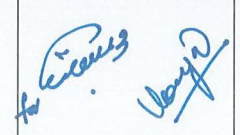

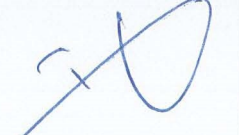
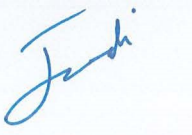


COMPANY STANDARD INSTRUCTIONS MANAGEMENT OF RADIOACTIVE MATERIAL

Instruction Number: IN-250-HSE-21

Document Classification: Internal

Approved by	Name	Paul Vermeiren	
	Position	Chief HSEQ Officer	
	Date	12/12/2019	

Rev.	Date	Prepared by	Reviewed by		
00	10-12-2019				
		Sr. IH / HSE Officer	SEM	HSEQGM	TGM

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Revision / Modification History:

Rev #	Date	Section No.	Reason for revision / modification
0	10/12/2019	All	Change the document from Procedure PR-250-HSE-03 to IN-250- HSE-21. Added PPE requirements Added MME requirement for individual licenses

Review Team:

Date	Rev	Department	Title
10.12.2019	0	Safety	Sr. Safety officer
		SED	Sr. Industrial hygiene officer
		HSSE Support	Sr. HSSE Officer
		Maintenance	Automation Supervisor

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1. OBJECTIVE

The core purpose of this instructions is to eliminate, prevent and control the health hazards associated with handling of ionizing radiation sources.

This instruction intends to establish proper system pertaining to radioactive material / sources by addressing;

- Responsibilities for managing activities involving radioactive materials.
- Radiation source monitoring and safety guidelines.
- Radiation source licensing and disposal.

2. SCOPE

The standing instructions applies to all activities involving handling and management of Ionizing radiation material / sources in the company. It is applicable to all PSS employees, contractors, facilities, and services without exception.

3. INSTRUCTION SUMMARY

Radioactive Materials are sources of ionizing radiation and present distinctive risk to personnel handling or working around them. The core purpose of this instructions is to eliminate, prevent and control the health hazards associated with handling of ionizing radiation sources.

This instruction intends to establish proper system pertaining to radioactive material / sources by addressing;

- Responsibilities for managing activities involving radioactive materials.
- Radiation source monitoring and safety guidelines.
- Radiation source licensing and disposal.
- These instructions apply to all activities involving handling and management of Ionizing radiation material / sources in the company. It is applicable to all PSS employees, contractors, facilities, and services without exception.

4. ABBREVIATIONS / DEFINITIONS

#	Abbreviation / Key word	Definition summary
1	CHSEQO	Chief HSEQ Officer
2	TGM	Technical Group Manager
3	MOC	Management of change.
4	HSEQ- GM	HSEQ Group Manager
5	SEM	Sustainability and environment group manager

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6	HSESM	HSE Support Manager
7	SED	Sustainability and environment department
8	PTW	Permit to work System
9	CCR	Central Control Room
10	Radioactive Material	Any substance, which emits ionizing radiation such as alpha and beta particles, gamma and X-rays or neutrons.
11	Radiation Source	Any physical entity causing exposure as a result of emitting ionizing or non-ionizing radiation or releasing or leaking radioactive materials.
12	Radiation Protection Officer (RPO)	A qualified technician designated by the competent agency or department, or employed in the installations and corporations, which use radioactive sources in order to oversee the implementation of the prescribed radiation protection regulations and give advice on radiation protection.
13	Classified Radiation Worker (CRW)	A person who performs work, on permanent basis, in a field involving ionizing radiation, or carries out activities requiring availability in a place where radiation sources are used. He shall be experienced, trained and certified by MME
14	Non-Classified Person	All persons who are not classified as radiation workers. They should not be permitted to work in the controlled area where the radiation exceeds 7.5uSv/hour.
15	Occupational Radiation Exposure	The regulations of the MME limit the individual annual whole-body equivalent dose to 20 mSv (No employee shall be exposed to a dose of radiation exceeding the maximum limit per a year).
16	Radiation Badge (Thermoluminescence)	A badge constructed from material which, having been irradiated, releases light in proportion to the radiation absorbed when subsequently heated.
17	Personal Dosimeter	A device to detect and measure ionizing radiation e.g. a pencil-size ionization chamber with a self-reading electrometer, used for personnel monitoring.
18	Dose-rate	Dose / Time (uSv/h or Sv/h). Dose-rate is a measure of the dose received at a location over a period of time. Dose-rate is measured with a hand-held radiation monitor.
19	Controlled Area	The dose-rate limit is < 7.5 uSv/hr. 1 meter radius from source Control areas should be established in places where the workers may be exposed to occupational doses exceed three tenths of dose equivalent or effective or associated occupationally as determined by the Ministry of Environment.
20	Supervised Area	The dose-rate limit is < 2.5 uSv/hr. An area that does not require classification as a controlled area but where the occupational exposure conditions need to remain under review, even though no certain measures for protection and safety are normally required.
21	Sealed Radioactive Sources	For industrial applications radioactive sources are encapsulated inside a non-active stainless-steel capsule. This is called sealed radioactive sources,
22	Disposal	In relation to radioactive waste, dispersal or emplacement in any medium without the intention of retrieval.

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23	Temporary Storage Yard	It is the facility designed for temporary storage of Radioactive source and assures isolation, access control, human health and environment protection.
24	Curie (Symbol Ci)	The pre-SI unit of activity. One curie equals 3.7×10^{10} nuclear transformations per second. $1 \text{ Ci} = 3.7 \times 10^{10} \text{ Bq}$.
25	R	The pre-SI unit of dose equivalent; equal to 0.01 J/kg (see Sievert).
26	Sievert (Symbol Sv)	The unit of (effective) dose equivalent. The sievert has the dimension of joule per kilogram. The dose equivalent in sievert is numerically equal to the absorbed dose in grays multiplied by the quality factor (see Gray and radiation weighting factor).
27	Shield	A body of material used to prevent or reduce the passage of particles or radiation.
28	Gamma-Radiation:	It is a type of radiation consists of high energy photons (i.e. electromagnetic wave radiation of very high frequency),
29	MME	Ministry of municipality & environment
30	NDT	Non Destructive Testing
31	X-Rays	A discrete quantity of electromagnetic energy, without mass or charge. Energy contained much higher than that of visible light. They are usually produced by bombarding a metallic target with fast electrons in a high vacuum, as occurs in an X-ray machine. In some countries X-rays are called "Röntgen"-rays.
32	Radiation Emergency	Any accident, injury or loss of control of a radiation source that could cause an excessive or uncontrolled radiation exposure to any individual is referred to as a radiation emergency
33	PSS	Petrochemical Shared Services

5. DOCUMENT REFERENCES

#	Document ID	Document name	Summary of dependency or use
1	PR-PSS-139	Emergency Response Plan	Emergency communicate
2	IN-250- HSE-12	HSE Instruction for Radiography Certificate	Control on radiography activities
3	IN-253- ENV-03	Industrial Hygiene Exposure Monitoring Program	Monitoring
4	PR-PSS-110	Incident reporting & investigation procedure	Incident reporting and investigation

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6. RESPONSIBILITIES

#	Job Title	Responsibilities
1	HSEQ Management	Is responsible to provide a necessary advice, equipment and resources to ensure safe handling, and appropriate response for emergencies involving radiation material/source (as per regulation).
2	Procurement Manager	He must ensure that all the National Regulations and procedures are followed during import, export and licensing process of radioactive source.
3	Department Managers	All concerned department managers are responsible to ensure that all requirements of this instruction are followed for activities involving Radioactive Materials/source.
4	Medical Section Head	He is responsible to ensure that all required medical assistance is provided as per Local regulations and company procedures.
5	RPO (SED)	<p>He is responsible to</p> <ul style="list-style-type: none"> • Conduct Radiation monitoring survey at the workplace by use of Survey Meter at least twice a year. • Radiation monitoring data result shall be reported to concerned department. • Manage the issuance and renewal of Personal Licenses for radiation workers from MME / Radiation Protection Department. • Manage the Radiation Badges-TLD for all radiation workers. The Radiation Badges must be sent to MME for data monitoring. • Maintain the radiation exposure data (from Radiation Badges-TLD and Dosimeters) for all Radiation Workers. • Take appropriate measures in consultation with Sustainability & environment, Safety Manager whenever exposure (to workers) exceeds the limits. • Arrange calibration of survey meter and other monitoring devices as required. • Ensure that all the regulatory and procedural requirements are fulfilled for licensing and handling of radioactive material/sources. • Provide a advice to staff for any new regulatory requirement <p>Responsible to coordinate with MME for obtaining and renewing the Licenses. (Location, Establishment and Using of Radioactive Materials Licenses for the company)</p>
6	RPO Safety	<p>He is responsible to;</p> <ul style="list-style-type: none"> • Ensure that PTW system is being followed whenever handling of radioactive sources • Ensure that necessary precautions are taken (through PTW, JSA, barricading, radiation level monitoring, isolation etc.) to prevent exposure

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		<p>and/or to keep the radiation exposure to company staff and contractors at ALARA (As Low As Reasonably Achievable).</p> <ul style="list-style-type: none"> • Ensure that radioactive sources are properly managed and handled by authorized Radiation Workers during activities, removal or relocation etc. • Ensure proper planning to tackle emergency situations involving radiation source(s). • Advise and coach to workers regarding radioactive hazards • Arrange calibration of survey meter and other monitoring devices as required. <p>Ensure incidents, near miss & Safety observation related to radiation shall be investigated.</p>
7	Contractor involve in radioactive radiological work.	<p>Where Contractor employees are engaged in radiological work, they shall follow all National Regulations and PSS procedures. The responsibility for the health of the Contractor's employees must rest with the Contractor. Though, the contract holder should ensure that the Contractor fulfills his obligations. If the Contractor fails to do so, he should be advised in writing of a breach of contract. Failure to provide the necessary safety controls should result in the immediate termination of work.</p>
8	Firefighting	Develop emergency scenario and contingency plan & practice on regular interval.

7. PROCESS:

The use of Ionizing radiations in Qatar is controlled under Decree - Law No. 31 of the year 2002 for Radiation Protection. Compliance with the requirements of this regulation is mandatory for all the employees and contractors working in PSS facilities.

Radioactive isotopes of different intensities are present at PSS sites (Annex-1). These isotopes are installed in the instruments used to monitor process conditions in LDPE 1, 2, 3 and LLDPE. All these radioactive sources installed for level measurement must always be adequately sealed to prevent exposure to personnel.

7.1 RADIATION MONITORING:

- a All the workers required to work with ionizing radiation sources shall be classified radiological worker (MME licence holder).

Note: Pre-requisition for obtaining MME licence as classified radiological worker

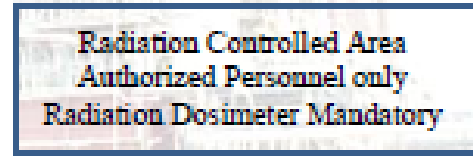
- Valid Training Certificate in “Radiation Work Field” (i.e. Operation & Maintenance of Nuclear Gauges)
- Valid Training Certificate in “Radiation Protection” (i.e. Radiation Protection in Industrial Application for Nuclear Gauges)

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- Minimum of 2 Years of Experience in field of Radiation Work (i.e. Document Required: Experience Certificate)
- Certificate of Physical Fitness to work in Radiation field issued by approved Medical Authority (i.e. Medical Certificate from the company Clinic)
- Copy of TLD Dose record. (In renewal & Modification)
- Other Documents- Valid RP, Passport & Photograph
- b** Contractor/ specialist shall arrange MME licence/ or applicable international laws as classified radiological worker for their employees at its own cost before intervene radioactive sources at PSS sites.
- c** All Radiation Workers shall use radiation measuring devices (i.e. Dosimeter, Radiation Badges-TLD) during activities involving radiation materials/sources.
- d** No worker shall be allowed to work inside controlled area without necessary radiation monitoring devices such as: TLD badge, digital dosimeter etc.)
- e** Radiation workers should properly trained pertaining to use of Personal Dosimeter and other PPEs related to Radiation Safety.
- f** Maximum permissible dose limit (annual) for radiological workers is 20 m Sv.
- g** The Radiation Badges (TLD) must be sent to MME by after 3 months for data monitoring.
- h** The exposure data collected from Personal Monitors (Dosimeters) must also be logged and maintained by RPO (SED) for all Radiation Workers.
- i** The radiation dose rate received by a person in contaminated area can be calculated as;

$$D = k (\text{milli curie}) (1000) / d^2$$
 Where,
 D = Dose Rate
 d = Distance from the Radioactive Source
 k = Constant (For Cesium-137 = 0.5)
- j** If Radioactive Isotope is of 300 milli curies, then exposure will be 4166 milli rem / hr within 6 inches radius of the source. 1.2 hours exposure of this strength will be equivalent to doze of one year for a person.
- k** Survey meter and other monitoring devices are calibrated as required to maintain integrity. If the radiation levels in any area exceed the limits area owner must be contacted and necessary measures to be taken to prevent the exposure to staff.
- l** Radiation work controlled areas should be properly barricaded and provided with warning signs to prevent unauthorized access.

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- m** The radiation levels outside the controlled area should be less than $7.5\mu\text{Sv/hr}$. As levels may vary considerably, owing to scattered radiation, regular monitoring of work area is required. If applicable, levels above and below the source location should also be monitored.
- n** If radiation safe limits cannot be attained, safe working practices should be adopted in consultation with RPO (Safety).
- o** In addition to routine surveys, potentially contaminated areas must be surveyed;
 - ✚ After any spill, leak, fire, or other disturbance in area.
 - ✚ Before maintenance or removal of any equipment that may have come in contact with radioactive material or that contains radioactive material.
- p** All the activities (i.e. movement, transportation, work near source) involving radiation material shall be carried out through applicable Permit to Work (PTW).
- q** Each area containing radioactive material/source shall be posted with the standard radiation safety signs.
- r** In case of over-exposure, Radiation Worker or RPO (SED) should immediately report the incident to SEM, HSEQ management who will decide about measures to be taken to avoid recurrence.

7.2 PREVENTIVE MAINTENANCE RADIOACTIVE SOURCES:

- a** Preventive maintenance for Radioactive Sources shall be conducted as per defined PM schedule and record shall be maintained and provided to RPO up on request.

7.3 PERSONAL PROTECTIVE EQUIPMENT REQUIREMENTS:

- a** Following specialized PPE (Lead Jacket) shall be used by first responders in case of radiation Emergency

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- b** Apparently, Lead Sheets and Lead Jackets can also be recommended to use by CRW or other specialist workers based on JSA/PTW Requirements (depending on Type of Job)



7.4 LICENSING FOR RADIOACTIVE SOURCES

- a** The Purchase of new radioactive sources will be done through Materials Department.
- b** The Local Regulations for import of radiation source require getting Import License from Ministry of Environment (MME).
- c** Likewise, the export of the source for disposal also requires Export License from MME.
- d** The issuance of Import or Export License for the radioactive sources from MME will be managed by Materials Department in coordination with SED.
- e** Temporary Storage Facility shall be used for safe storage before arrangements are made to fix the source in the plant or transport to vendor for disposal.
- f** Obtaining and renew of following licences shall be done through SED.
 - License for using of radioactive source (renewal Yearly basis)
 - License for possession of radioactive source (location + establishment) (Renewal every 3 years.
 - Personal license for RPO and classified radiological workers. (every 2 years)
- g** RPO (SED) shall monitor the license validity.

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7.5 PHYSICAL SUPERVISION AND SAFETY PLAN FOR RADIOACTIVE MATERIAL/SOURCE:

- a All radioactive material/source at PSS sites must be secured or be under constant surveillance.
- b Radioactive source should only be moved / handled by authorized Radiation Workers under guidance and supervision of RPO.
- c Radioactive source shall never be left unsecured at any time.
- d Prior to any routine/non-routine activity near the source (less than 1 meter from source), Radiation Dose Rate in the work area shall be monitored by RPO SED. The job can only be started once the dose rates are within acceptable limits.
- e If the source is required to be moved or for the confined space entry (in the vessel), the source shall be isolated/secured by CRW. Isolation shall only be removed once the job is completed and all the personnel are moved away from the source.

7.6 REMOVAL OR RELOCATION OF RADIOACTIVE SOURCE:

- a. A detail Risk assessment (JSA) shall be conducted by execution department in consultation of RPO.
- b. All the activities involving removal or relocation of radioactive source must be supervised by RPO.
- c. Radioactive Source shall be properly isolated by CRW.
- d. Removal and relocation of isolated radioactive source shall only be done by authorized under supervision of RPO. It shall be ensured that proper lifting tools and equipment are available for handling the source.
- e. All the activities involving removal or relocation of radioactive source must be supervised by RPO (Safety).

7.7 HANDLING AFTER REMOVAL:

- a. Source must be directly transported to Temporary Storage Facility under supervision of RPO.
- b. It shall be ensured that Storage Facility is properly isolated / secured.
- c. It shall be ensured that Storage Facility is only used for temporary storage of radioactive source.
- d. If storage required for log time following measures shall be taken:
 -  Base line survey
 -  Regular monitoring (Bi-Annual Survey)
- e. It must be ensured that radiation levels around the Temporary Storage Facility does not exceed the allowable limits (< 7.5 uSv/hr).

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- f. Temporary storage facility maintenance and regular inventory management shall be done by maintenance automation.
- g. The spare keys of the Storage Facility shall always be available with Fire Fighting for emergency.
- h. After completion of the activity, the source can be reinstalled by authorized Radiation Workers following the precautions under supervision of RPO (Safety)
- i. In case of replacement, old source can be stored in Temporary Storage facility but, it shall be ensured that source is removed from the site as early as possible for disposal.
- j. Old Radioactive Source shall only be sent back to original vendor for safe disposal

7.8 RADIATION EMERGENCY CONTINGENCY PLANNING:

Adequacy of response to radiation emergency depends upon detailed understanding of the risks. Suitable scenarios regarding the radiation emergency should be established and practiced. Each individual who could be influenced by radiation source/material should be familiar with the basic emergency responses. The company shall be equipped with all the necessary Tools, Equipment and Accessories required to handle radiation Emergency. RPOs & other subject matter experts (i.e. Area Owner, Equipment specialist) shall be consulted in case of establishing external communications to Legal Authorities or suppliers/vendors.

7.9 DISTRIBUTION / TARGET AUDIENCE

This Instruction will be circulated to all employees through the company Intranet and made available for reading.

Minimum following personnel shall have knowledge and / or awareness of this instruction and its intent:

- a Production, Maintenance & inspections Supervisors
- b Inventory & Material supervisors
- c Contractor staff in Safety Critical Positions
- d HSEQ Staff
- e Other staff working & managing radioactive materials

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8. RECORDS

Following document to be maintained:

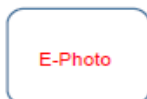
#	Record ID	Records Name	Responsible	Retention Time
1	NA	Specification of Radioactive Materials	Maintenance / ESD	Unlimited
2	NA	Contingency Plan	FF Department	Unlimited
3	NA	Individual Employee – Exposure record	RPO (SED)	As per Hygiene Monitoring Procedure
4	NA	Occupational Medical examination record	Medical section	As per medical procedure
5	NA	licenses	SED	Validity period
6	NA	Personal Detectors Records	SED	As per MME requirement
7	NA	Training Records	L&D	05 years

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9. APPENDIX

Certificate of Physical Fitness to Work in Radiation field.

Medical Section HSSE Division	Certificate of Physical Fitness To Work in Radiation Field	
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Personal Data: - Name of work place: - Name of the worker: - Date of birth: - Sex: - Nationality:	- Occupation: - QID: - Mobile Number: - QAPCO's File No.: - E-mail Address:
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<u>Medical data:</u>	Normal	Abnormal	Remarks
Clinical Examinations.			
Laboratory Investigations:			
- CBC			
- Thyroid Function Tests (TFTs)			
- *Semen Analysis			
*I refuse to apply for semen analysis & I will take a full responsibility for any health consequences on my fertility due to radioactive materials in my job. Signature:			

Decision: Concerning fitness to work with radio-active materials, it was found that the above mentioned person: <ul style="list-style-type: none"> - Fit For Work <input type="checkbox"/> - Temporarily unfit <input type="checkbox"/> - Permanently unfit <input type="checkbox"/> Comments on Unfitness:
--

We Hereby Certify That, Above Results of the Tests Are True and Correct


<u>Examining Physician</u>	<u>HSSEQ Group Manager</u>	<u>Chief HSSEQ Officer</u>
<u>Name:</u>		
<u>Signature:</u>		

Occupational Health Section

Ministry of Municipality & Environment

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9.1 List of Radioactive sources in QAPCO

Environment Section HSE Department	LIST OF RADIOACTIVE SOURCES IN QAPCO (Total 38 Nos. Radioactive Sources – 37 Nos. Cesium-137 & 01 No. Cobalt-60 – Application: Radiometric Measuring System)	
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Sr. No.	Configuration	Description	Location of Radioactive Sources on Process Vessel	Source Tag No.	Source Strength	Source No. / Model	Source Serial No. / Identification No. (ID #)	Container Serial No. / Shielding Type
LDPE-1 (Total 09 Nos. Cesium-137 Point Sources)								
1	Cesium-137	Point Source	HP Hopper V-5208, H.L.	LX 5-13201	700mCi	ON863	8900220100 E1	QG100-YP1C
2	Cesium-137	Point Source	HP Hopper V-5208, L.L.	LX 5-13202	200mCi	OK184	8900260100 E1	QG100-RP1B
3	Cesium-137	Point Source	LP Hopper A (V-5209A), H.L.	LX 5-13203	100mCi	OK185	8900230100 E1	QG100-RP1C
4	Cesium-137	Point Source	LP Hopper A (V-5209A), L.L.	LX 5-13205	50mCi	OK188	8900270100 E1	QG100-RP1A
5	Cesium-137	Point Source	LP Hopper B (V-5209B), H.L.	LX 5-13204	100mCi	OK186	8900240100 E1	QG100-RP1C
6	Cesium-137	Point Source	LP Hopper B (V-5209B), L.L.	LX 5-13206	50mCi	OK187	8900280100 E1	QG100-RP1A
7	Cesium-137	Point Source	Wax Hopper (V-5108)	LX 5-13401	20mCi	OK189	8900250100 E1	QG020-RP1C
8	Cesium-137	Point Source	Separator Vessel (V-5103)	LX 5-13108	500mCi	OK190	8900210100 E1	QG100-YP2Y
9	Cesium-137	Point Source	Separator Vessel (V-5103)	LX 5-13109	10mCi	OK191	8900200100 E1	QG100-YP2Y
LDPE-2 (Total 06 Nos. Cesium-137 Point Sources)								
10	Cesium-137	Point Source	LP Separator V-8130, L.L.	LX 810502-1	30.0 mCi	EM 598	-	-
11	Cesium-137	Point Source	LP Separator V-8130	LX 810502-2	30.0 mCi	EM 600	-	-
12	Cesium-137	Point Source	LP Separator V-8130	LX 810502-3	200.0 mCi	DX 549	-	-
13	Cesium-137	Point Source	LP Separator V-8130, H.L.	LX 810501	15.0 mCi	EN 613	-	-
14	Cesium-137	Point Source	Wax Collection Drum V-8120, H.L.	LX 810801	100.0 mCi	EE 523	-	-
15	Cesium-137	Point Source	Wax Collection Drum V-8120, L.L.	LX 810802	100.0 mCi	EE 518	-	-
LDPE Plant (Total 10 Nos. Cesium-137 Point Sources)								
16	Cesium 137	Point Source	Reactor 4-C-4001	4-RX-4001-137	2000 mCi	13538841	7788CM	SHLM-CR-3
17	Cesium 137	Point Source	Product Chamber 4-C-4101	4-LX-4101-20	10 mCi	13538842	106/08	SH-F1A
18	Cesium 137	Point Source	Product Chamber 4-C-4105	4-LX-4105-20	10 mCi	13538843	107/08	SH-F1A
19	Cesium 137	Point Source	Product Chamber 4-C-4106	4-LX-4106-20	10 mCi	13538844	108/08	SH-F1A
20	Cesium 137	Point Source	Product Chamber 4-C-4107	4-LX-4107-20	10 mCi	13538845	109/08	SH-F1A
21	Cesium 137	Point Source	Product Purge Bins 4-C-5009-6A	4-LX-5009-6A	300 mCi	13538846	6595CN	SH-F2
22	Cesium 137	Point Source	Product Purge Bins 4-C-5009-6B	4-LX-5009-6B	300 mCi	13538847	6284CN	SH-F2
23	Cesium 137	Point Source	Product Purge Bins 4-C-5009-6C	4-LX-5009-6C	300 mCi	13538848	6703CN	SH-F2
24	Cesium 137	Point Source	Product Purge Bins 4-C-5009-6D	4-LX-5009-6D	300 mCi	13538849	6707CN	SH-F2
25	Cesium 137	Point Source	Product Purge Bins 4-C-5009-7	4-LX-5009-7	400 mCi	13538850	9089GK	SH-F2
LDPE-3 Plant (Total 13 Nos. - 12 Nos. Cesium-137 & 01 No. Cobalt-60 Point Sources) / Applicant: UHDE GmbH & Supplier: Berthold Technologies GmbH & Co. KG								
26	Cesium 137	Point Source	V-9131 - Area AC 92	LT912702-S1	500 mCi	2465-12-11 / C87.P02	1267-10	Typ 150 (17493 M1+57800 B1)
27	Cesium 137	Point Source	V-9131 - Area AC 92	LT912702-S2	500 mCi	2466-12-11 / C87.P02	0247-11	
28	Cesium 137	Point Source	V-9131 - Area AC 92	LS912701-S3	500 mCi	2475-12-11 / C87.P02	0008-11	
29	Cobalt - 60	Point Source	V-9141 - Area AC 92	LT913002, LS913001, LS913005	350 mCi	1149-07-12	47397-41	10010 / LB 8125
30	Cesium 137	Point Source	V-9142 - Area AC 90	LT913103-S1	100 mCi	2469-12-11 / C87.P02	1211-10	Typ 150 (17493 M1)
31	Cesium 137	Point Source	V-9142 - Area AC 90	LT913103-S2	50 mCi	2468-12-11 / C87.P02	0940-11	Typ 100 (17491 M1)
32	Cesium 137	Point Source	V-9142 - Area AC 90	LS913104-S3	100 mCi	2476-12-11 / C87.P02	0872-10	LB7440 (37624 M1)
33	Cesium 137	Point Source	V-9142 - Area AC 90	LT913152-S4	80 mCi	2477-12-11 / C87.P02	0608-10	LB7440 (37624 M1)
34	Cesium 137	Point Source	V-9161 - Area AC 90	LT914002-S1	10 mCi	2472-12-11 / C87.P02	0837-11	Typ 100 (17491 M1)
35	Cesium 137	Point Source	V-9161 - Area AC 90	LT914002-S2	3 mCi	2471-12-11 / C87.P02	0723-11	Typ 100 (17491 M1)
36	Cesium 137	Point Source	V-9161 - Area AC 90	LT914002-S3	2 mCi	2470-12-11 / C87.P02	0896-10	Typ 100 (17491 M1)
37	Cesium 137	Point Source	V-9163 - Area AC 99	LT914201-S1	10 mCi	2474-12-11 / C87.P02	0827-11	Typ 100 (17491 M1)
38	Cesium 137	Point Source	V-9163 - Area AC 99	LT914201-S2	5 mCi	2473-12-11 / C87.P02	0769-11	Typ 100 (17491 M1)