

Department of Environmental Quality
Emergency and Radiation Services Division
Implementation Manual for Management
of Naturally Occurring Radioactive
Material (NORM)

Final Draft * 8 January 2021



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I. Purpose

On January 20, 1995, the revised NORM regulations (LAC 33:XV, Chapter 14) became effective. This revised Implementation Manual reflects changes and revisions made, including the Emergency and Radiological Services Division's position on certain NORM issues that are not specifically addressed in the NORM regulations.

II. Definitions

Advantageous Attribute or Advantageous to the Material or Product—the radioactivity of the product is necessary to the use of the product.

Beneficiating—the processing of materials or products for the purpose of altering the chemical or physical properties to improve the quality, purity, or assay of a desired product or material.

Confirmatory Survey—a survey of potentially contaminated land, equipment, or sites in order to establish, with reasonable certainty, the absence or magnitude of NORM contamination.

Container—any portable device in which a material is stored, transported, treated, disposed of, or otherwise handled. This does not include tubular goods or drill pipe for labeling purposes under these regulations.

Decontamination—the act of removing regulated NORM to reduce levels of radiation.

Disposal—the discharge, injection, or placing of regulated NORM into or on land so that such material is isolated from the biosphere inhabited by man and containing his food chain.

Equipment—any apparatus associated with the potential for or actual enhancement of NORM. Examples include, but are not limited to, tubular goods, piping, vessels, wellheads, separators, and condensers.

Exploration and Production Waste (E&P Waste)—drilling wastes, salt water and other wastes associated with the exploration, development, or production of crude oil or natural gas wells and which is not regulated by the provisions of, and, therefore, exempt from the Louisiana Hazardous Waste Regulations and the General Resource Conservation and Recovery act, as amended.

Location—NORM contaminated site(s), such as a commingling facility, a wellhead, a tank battery, any other type of production facility for oil or gas, a warehouse, or other type of NORM storage area for equipment or drums, pipeline, land, or pipeyard. A location may contain several sites.

Naturally Occurring Radioactive Material (NORM)—any nuclide that is radioactive in its natural physical state (i.e., not man-made), but not including source, byproduct, or special nuclear material.

Nonhazardous Oilfield Waste (NOW)—Type of Exploration and Production Waste; solid material produced from Oil and Gas related activities that contains exempt quantities of hazardous components according to the Resource Conservation and Recovery Act.

NORM General License Number—the number assigned by the Department to the person or company/operator to be regulated under §1408.A.

NORM Site or Field Specific Identification Number (FSIN)—The number assigned by the Department to each registered NORM site or NORM field.

NORM Waste—the radioactive residue from any operation where the purpose is to remove NORM from soil, materials, or equipment.

On-Site Maintenance—any activity involving a site or equipment that subjects an individual to potential inhalation or ingestion of NORM. This includes, but is not limited to, performing maintenance on vessels, tanks, tubular goods, or water treatment systems, or the clearing of pipe lines to maintain oil and gas production.

Pile—any non-containerized accumulation of solid, non-flowing NORM waste.

Product—anything produced, made, manufactured, refined, or beneficiated.

Recycling—a process by which materials that have served their intended use are collected, separated, or processed and returned to use in the form of raw materials in the production of new products. Recycling shall not include the use of a material in a manner that constitutes disposal.

Site—any part of a location, land area (e.g., well site, pipeyard, scrapyard, production pit, treater/disposal facility, landfarm, landfill), equipment (each wellhead, each tank, each vessel, each separator, or any other apparatus associated with a process that has technologically enhanced naturally occurring radioactive material) or other appurtenances in a facility that contain technologically enhanced NORM, both active and inactive.

Storage—the containment of NORM waste in such a manner as not to constitute disposal of NORM waste.

Tank—a stationary device designed to contain an accumulation of NORM waste that is constructed primarily of non-earthen materials (e.g., wood, concrete, steel, plastic) that provide structural support and integrity.

Technologically Enhanced Natural Radioactive Material (hereinafter referred to as *TENR*)—natural sources of radiation which would not normally appear without some technological activity not expressly designed to produce radiation.

Temporary Jobsite—any location where services subject to specific licensure are performed, other than the authorized location(s) listed in the specific license.

Treatment—any method, technique, or process designed to change the physical or radiological character or composition of any NORM or NORM waste so as to render it less radioactive, safer for transport, amenable for recovery, amenable for storage, reduced in volume, or changed in concentration.

Unrestricted Use—any use that does not have controls in place to protect an individual member of the public from exposure to radiation and radioactive material.

III. Scope

The revised NORM regulations break into three basic categories: diffuse NORM waste, equipment, and land. Each licensee must determine if their material, equipment, facilities, and/or land is exempt or regulated based on the standards outlined below. If the exemption standards cannot be applied, the licensee will be regulated under the general license requirements (§1408).

A. Diffuse NORM Waste (§1404.A)

- Refers to all material that has no beneficial use or value not specifically addressed in §1404.C (e.g.: tank sludge, production sands, pipe scale, etc.).
- The activity of the material is measured to be 5 picocuries per gram of Ra-226 or Ra-228 or 150 picocuries per gram of any other NORM radionuclide above background levels.
- The activity shall be determined by a radiological laboratory or estimated using a field method approved by The Department.
- Materials as stated in §1404.F through §1404.I are exempt, including:
 - Potassium and Potassium compounds not enriched in K-40
 - Industrial materials that have not been technologically enhanced
 - Byproducts from fossil fuel combustion like fly ash, bottom ash, and flue gas
 - Phosphogypsum and bauxite waste
 - Phosphate and potash fertilizer
 - Phosphogypsum for agricultural use
 - Natural gas and its subsequent byproducts
 - Crude oil and its subsequent byproducts
 - Produced water from crude oil and natural gas processes.

B. Equipment (§1404.B)

- Refers to all tanks, vessels, heater-treaters, pipes, tubular goods, filters, clean-out traps, etc. with a radiation exposure rate exceeding 50 μ R per hour.
- Any equipment with a radiation exposure rate less than 50 μ R per hour is considered exempt.
 - * Note: An exempt piece of equipment may contain material that once removed may become non-exempt and regulated as Diffuse NORM Waste under §1404.A. Any material exhibiting readings greater than twice background should be sampled prior to removal to ensure compliance.

C. Land (§1404.C)

- Refers to oilfield and gas properties, pipe-yards, real estate, and pits with a concentration averaged over any 100 square meters within a single non-composited sample in exceedance of 60 picocuries per gram of Ra-226 or Ra-228 above background.
- Exemptions fall under two categories:
 - Sites where the top 15 centimeters of ground sampled reveals averaged readings of 5 picocuries or less of Ra-226 or Ra-228 and 15 picocuries or less for every subsequent 15 centimeters depth increment.
 - Sites with 30 picocuries per gram or less of Ra-226 or Ra-228, averaged over 15 centimeter depth increments and not accessible in such a way that any member of the public would receive a total effective dose equivalent (TEDE) exceeding 100 millirem in a year.
 - * Note: A person or company must supply dose calculations to meet this exemption.

IV. Radiation Survey Instrumentation (§1406)

Prior to performing gamma surveys, a person or company/operator should obtain a radiation instrument capable of measuring the energies of radiation that are characteristic of NORM. The Department utilizes one-by-one-inch sodium iodide detectors in conjunction with an appropriate ratemeter or μ Roentgen meter, however, the licensee may choose other instrumentation if appropriate. Regardless of instrument used, it should be properly calibrated at annual intervals in compliance with §1406.B.1 and checked for battery operability and response utilizing a radiation source prior to use. Personnel must be adequately trained in radiation safety, instrumentation use, and interpreting radiation readings pursuant §1499, Appendix A.

- * Note: For use in potentially explosive atmospheres, explosive gas measurements should be made prior to the radiation survey and intrinsically safe instrumentation should be utilized.

V. Gamma Surveys (§1407)

The daughter products of natural uranium and thorium are the primary radioisotopes occurring as NORM. These radioisotopes emit alpha, beta, and gamma radiation. The alpha and beta radiation typically is shielded inside vessels or pipes, however, gamma radiation can penetrate metals. Consequently, conducting a survey for gamma radiation can be used to determine the occurrence of NORM.

A. Confirmatory Surveys

- A person or company/operator should survey potentially contaminated sites or production fields within their control. A major objective of this survey is to identify contaminated equipment and prevent inadvertent use by the general public.
- A confirmatory survey should be conducted systematically. Individuals involved in the confirmatory survey must have training as outlined in §1499, Appendix A. The submittal of a confirmatory survey to the Department should be accompanied with evidence of such training.
- If the confirmatory survey reveals that a site or production field is required to be regulated under §1404.C, the person or company responsible for the contamination will become subject to general license requirements (VII. General License Requirements).
- For sites greater than 5 acres, the Department may be contacted prior to sampling. The Department may allow differing sampling methods at their discretion; in this situation the Department must be contacted prior to sampling.

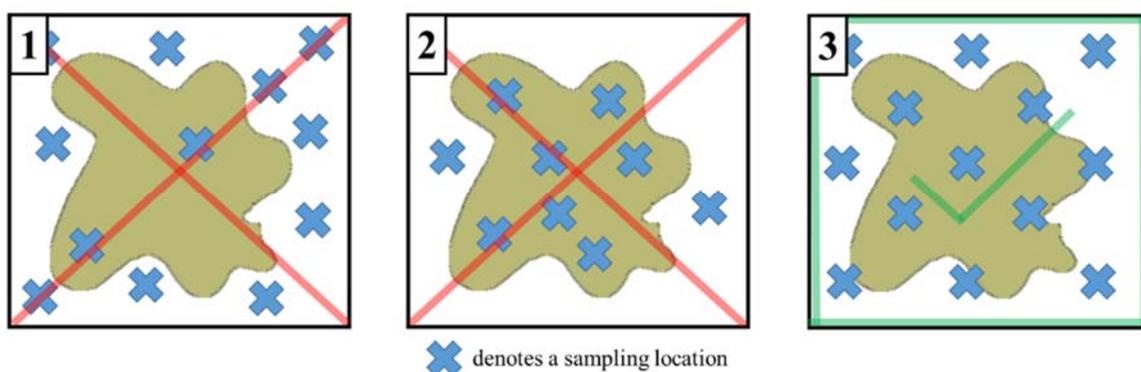
B. Delineation, Sampling, and Analysis

- The delineation and sampling procedures outlined below can be utilized in the three different phases of assessment: the confirmatory survey, remediation activities, and the release survey.
- Areas of land potentially contaminated should be delineated in a grid that contains the entire area to be surveyed. Individual grids should not exceed 100 square meters (10 meters of length). In areas of known contamination, grid

size should not exceed 9 square meters (3 meters of length). Each grid line should be surveyed from the corner to corner, recording readings every 10 or 3 meters, respectively. These readings should be documented on a site sketch that includes recorded contamination areas and all sampling locations.

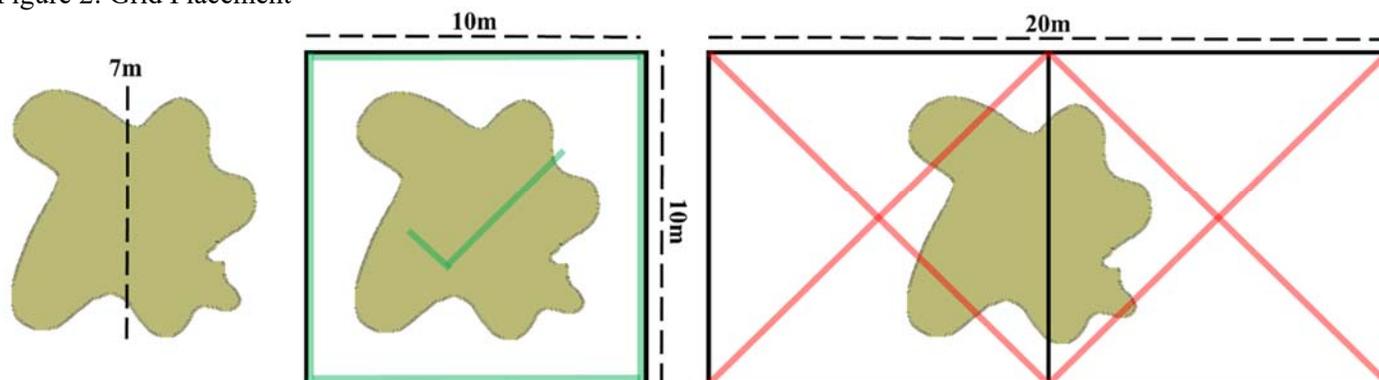
- If samples are taken, the surveyor should take an adequate amount of samples within the grid to characterize the contamination in 15cm depth intervals of soil. No more than three samples should be composited together for one sample. A chain of custody form should be completed and the sample should be sent for radiological analyses.
- Outlined below are the general rules for sampling:
 - The surveyor should use appropriate sampling tools (e.g. shovel, auger, trowel, coring device, etc.) to retrieve representative samples at the aforementioned depths. All tools used should be wiped and cleaned between samples to prevent possible cross contamination. The survey should retrieve approximately one quart or one pound of soil to be analyzed. Each sample should be labeled including: date, sample location, sample number, etc. Samples should be accompanied with a chain of custody.
 - * Note: It is against the law to mail radioactive materials through the U.S. Postal System. Radioactive materials can be shipped as “Limited Quantity” using a private carrier such as UPS or FedEx.
 - When sampling an area, the samples should be statistically representative of the entire area’s contamination level. If the contaminated area covers 50% of the 100 square meter area, then 50% of the collected samples should be from the contaminated area (See Fig. 1)

Figure 1: Statistical Sampling



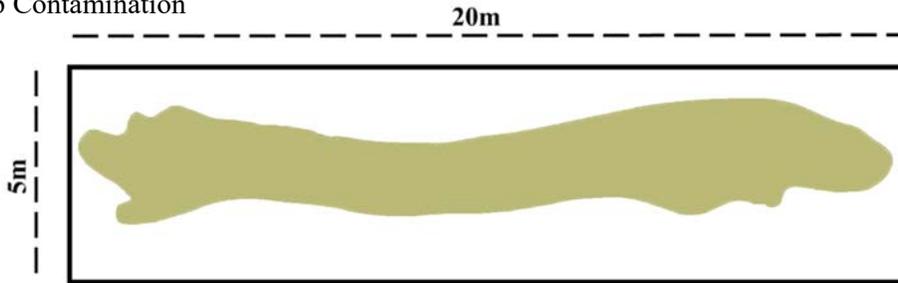
- When sampling a contaminated area which is less than a 100 square meter area, the contaminated area must be sampled within a single 10-meter by 10-meter grid and may not be split into two sections (See Fig. 2).

Figure 2: Grid Placement



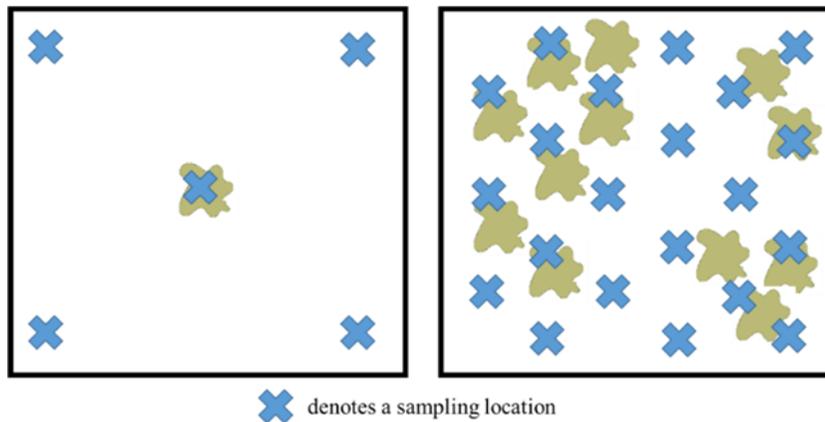
- If the contamination occurs in narrow strips with a width of one meter or less, the licensee may change the dimensions of the sampling area (See Fig. 3). The dimensions of the sampling area should not be narrower than five meters on any boundary and must consist of 100 square meters.

Figure 3: Narrow Strip Contamination



- If a small area of contamination is encountered (less than one meter in diameter), then the contaminated area should be placed in the center of the 100 square-meter sampling area. A minimum of one sample shall be collected from the contaminated area and a minimum of four additional samples shall be collected by sampling the corners of the 100 square meter area. If numerous small contaminated areas are present in close proximity, they should be sampled within the same 100 square meter area. In this situation, more samples are required to assess contamination in a statistically valid fashion (See Fig. 4).

Figure 4: Small Area Contamination



VI. General License Requirements

NORM contaminated sites and equipment pose a hazard to the general public and must be registered with the Department. Registration can take one of two routes, dependent on the criteria met:

A. Site Specific General License (§1408)

- If a site or production field meets the regulatory standards to be classified as NORM, the Department must be notified using Form RPD-36 (Attachment 1). Each individual contaminated site and/or production field must be reported independently on their own Form RPD-36; Notification by production field assumes all components in the field are potentially contaminated.
- Upon receipt of Form RPD-36 by the Department, the notifier will be recognized as a general licensee under §1408, assigned a NORM general license number (licensee specific), and the NORM site or NORM field will be registered under a site or field specific number (location specific). Licensees can find their general license number and NORM site numbers from the invoice sent from the Department. For subsequent notification, the licensee's general license number will remain the same, but the NORM site or NORM field will be given a specific identification number.

- The general license will remain in effect for the licensee until all NORM sites or NORM fields have been either released for unrestricted use or transferred to another licensee. The licensee must notify the Department in writing of any transfers of NORM sites or NORM fields to another licensee.

B. General Licenses: Pipe Yards, Storage Yards, or Production Equipment Yards (§1410)

- A general license can be issued for pipe yards, storage yards, or production equipment yards to receive, possess, process and clean tubular goods and equipment that are contaminated with NORM, but do not exceed an activity level of 50 μ R/hr, by submitting an RPD-36. For these types of NORM general licenses, the licensee must additionally submit programs that will:
 - Screen incoming shipments to ensure that the 50 μ R/hr limit is not exceeded for individual pieces of tubular goods or equipment.
 - Ensure worker protection (See below: C. Worker Protection, this section).
 - Control soil contamination.
 - Prevent release of NORM contamination beyond the site boundary.
 - Detail methods for surveying and decontamination to ensure that soil contamination is not allowed to exceed 200 picocuries per gram of Ra-226 or Ra-228 or an exposure rate of 50 μ R/hr at one meter from the soil at any time.
 - Detail methods for cleanup in the event that soil contamination exceeds 200 picocuries per gram of Ra-226 or Ra-228 or an exposure rate of 50 μ R/hr at one meter from the soil.
 - * Note: If a site is contaminated, it must be reported to the department within 180 days of discovery.
- Prior to receipt of any NORM shipment, The Department must be notified by submitting the manifest 90 days in advance.
- Before releasing the property for unrestricted use, the soil must be decontaminated to a level not to exceed 5 picocuries per gram above background of Ra-226 or Ra-228.
- To decontaminate goods or equipment exceed the 50 μ R/hr limit, the licensee must apply for a specific license (See NORM Specific Licensing Guide).

C. Worker Protection (§1411; §1499, Appendix B)

- The general licensees under §1408 and §1410 are required to submit worker protection procedures to ensure the protection of workers during onsite maintenance operations or excavation of land activities. These procedures must include detailed development of the following:
 - Posting of appropriate signage (§451 and §1011) to notify personnel when they are entering a NORM contaminated area.
 - Prevention of eating, drinking, smoking, and chewing in areas where work is being performed on contaminated equipment or where contaminated soil is being handled.
 - Avoiding skin contact with NORM contamination using protective clothing such as gloves, coveralls, rubber boots, and eye protection.
 - Washing body parts that may have been contaminated before eating, drinking, smoking, or leaving the work area.
 - In restricted areas: whole body monitoring of personnel.
 - Access control to limit the number of personnel in a contaminated area.
 - Operational procedures for handling NORM contaminated equipment, soil, or containers.
 - For operations that have the potential to produce NORM contaminated dusts (cutting, grinding, sand-blasting, welding, drilling, polishing, or handling soil) or when loose contamination is suspected the licensee must additionally supply procedures for:
 - Respirator use
 - Safety glasses use
 - All activities to be conducted in well-ventilated areas with restricted access
 - Use of ground covers to contain contamination and facilitate clean up
 - When/if personnel monitoring and bioassay need to be provided

- If applicable, operational procedures for vessel entry, dismantling/refurbishing equipment, and/or transportation may be required.

D. NORM Waste Management Plan

- A general licensee is authorized to store NORM waste in a container, without submittal of a NORM Waste Management Plan, for a limit of 90 days from the date of generation. To store NORM waste in a container for up to 365 days from generation, a general licensee must submit a NORM Waste Management Plan to the Department and receive authorization. Once the plan is submitted, the licensee may store NORM waste while waiting for The Department's determination.
- Licensees may submit one plan for all of their NORM storage sites provided the sites are all referenced in the plan and each site has an individually submitted Form RPD-36.
- Basic Requirements for a NORM Waste Management submittal for a licensee that intends to store containers of NORM waste include:
 - Containment within a drum storage area
 - * Note: Containers utilized for NORM storage must be sufficient to prevent leakage and shall be non-reactive and incompatible with the NORM waste to be stored. (§1414)
 - Use of ground covers or some other means to prevent the contamination of the underlying soil
 - Restrictive access
 - Quarterly inspections (drum integrity, visible labeling, contamination surveys)
 - Inventory Program for incoming and outgoing diffuse NORM waste.
 - * Note: Quarterly inspections and Inventory must be maintained for review by the Department for five years. (§1414.G)
 - Contingency plan (natural disaster preparation)
 - Security provisions (§445.A)
- Financial assurance will be required for interim NORM waste storage facilities. The licensee should calculate financial assurance based on the transfer and disposal/treatment of the estimated annual inventory of containerized NORM waste.
- Storage of NORM waste in piles is prohibited.
- Storage of NORM waste in a Storage Tank is permitted. The licensee must submit a schedule and procedure for each tank, including:
 - Detecting integrity of the tank (leaks, cracks, corrosion, erosion, or wall thinning)
 - Emptying the tank to allow entry for inspection of the interior walls
- * Note: For departmental approval of a NORM Waste Management plan for storage of NORM waste, evidence that the Parish governing officials where the facility is located have been notified must be provided.

VII. Release for Unrestricted Use

Have new plans for your land? Any NORM site registered must, before being used by members of the general public, be free of contamination. Prior to the decontamination of equipment or remediation of land for unrestricted use, the licensee should notify the Department. The decontamination for unrestricted use of contaminated facilities, sites, or equipment shall only be performed by persons specifically licensed by the Department, the U.S. Nuclear Regulatory Commission, an agreement state, or a licensing state to do radiation work.

A. Equipment

- All equipment exceeding 50 μ R/hr must be decontaminated before it will be considered for unrestricted use or recycled/disposed.
- Decontamination must reduce the exposure rate to less than 50 μ R/hr and the external surfaces must be free of loose contamination (less than twice background in μ R/hr).

* Note: Many commercial scrap yards have established acceptability limits (individual protocol) for equipment to be received into their facilities; A piece of equipment that meets regulatory requirements for unrestricted use may be denied at a commercial scrap yard.

- Internal assessment of contamination must be conducted on equipment prior to disassembly or removal.
- Determination of decontamination should be conducted by wipe test, whereby a wipe is smeared on the exterior and interior surface of equipment and counted in a low background area with a survey meter or scaler with an appropriate detector.

B. Land

- Registered sites where soil contamination was previously reported must meet the following criteria prior to consideration of release for unrestricted use:
 - Records must indicate that areas of previous contamination (from an original confirmatory survey with samples) were remediated to be below 5 picocuries per gram or less of Ra-226 or Ra-228 above background within the first 15cm of soil depth as determined by a radiological laboratory analysis.
 - The licensee has performed a post survey of the land that documents the remediation of the contaminated areas.
 - Records document the transfer of contaminated soil from the site to an authorized and/or licensed facility for treatment, storage, and/or disposal.
- Registered sites where equipment had been previously reported to be contaminated will be considered for release if the licensee has resurveyed the site and the following criteria are met:
 - No piece of equipment is found to exceed 50µR/hr.
 - Records indicate that equipment previously reported to be NORM contaminated has been decontaminated or transferred to another NORM registered site.

C. Filing for Release

- The licensee should submit a written request to the Department in order to release a site under a General License. The request must include:
 - A letter from the licensee specifically requesting release from the general license for the location
 - General license information (address, contact person, phone number, email address, general license number)
 - Type of contamination
 - Location of remediation or decontamination activities
 - Onsite – copies of Form RPD-35 Temporary Jobsite Notification indicating the specific licensee that performed the remediation
 - Offsite – copies of the manifest records for the waste transfer and license of the receiving facility
 - Facility ID Number
 - Facility Name
 - Facility Location (address, phone number, directions to location, GPS coordinates for well site, Google Earth imagery, etc.)
 - Description of site (size, structure, concrete slab, terrain, wooded, water, residential, etc.)
 - Copy of closeout survey, sample results performed after cleanup, and training qualifications for the person(s) who performed the survey
 - Records indicating the whereabouts and status of NORM contaminated equipment transferred from the site including manifest records and license of the receiving facility
 - Duplicate of survey plot without radiation readings.
- Information submitted to the Department will be evaluated and the site considered for release. In some cases, an inspector will be sent to perform a survey inspection before the release will be authorized. The Department may deny a release request in cases where insufficient information was submitted, survey data is suspect or questionable, and/or the inspector's field survey revealed incomplete remediation efforts; In such cases, the licensee will be contacted.

- If The Department’s evaluation determines the site can be released for unrestricted use, a letter releasing the site for unrestricted use will be issued by the Department and sent to the licensee.
- * Note: The Department does not consider a Plugged and Abandoned report as confirmation or verification that the previously reported NORM contamination has been removed.

VIII. Treatment and Disposal

The Department regulates two types of NORM waste: General and Non-Hazardous Oilfield Waste (NOW). The Department of Natural Resources, Office of Conservation, dictates the determination of a waste to be a NOW, and the regulations pertaining to these classifications can be found in LAC 43.XIX, Chapter 5 “Exploration and Production Wastes”.

A. General NORM Waste

- Each NORM licensee shall manage and treat NORM waste in accordance with EPA restrictions and LAC 33:XV, Chapter 4.
- Treatment or disposal can happen one of two ways:
 - The licensee can transfer the waste to a land disposal facility licensed by the Department, the Nuclear Regulatory Commission, any agreement state, or a licensing state.
 - The licensee can ask for authorization from the Department for any alternate method. In this case, the method must be detailed in writing and approved prior to disposal.
- Intrastate transfer of NORM waste for disposal must be made to persons authorized by the Department to receive such waste. The initial licensee must confirm that the recipient has been authorized before the transfer.
- Melting scrap metal can be authorized by a specific license if the dilution of NORM in the end product or melt byproducts reduces the concentrations of Ra-226 and/or Ra-228 to less than 5 picocuries per gram.

B. Non-hazardous Oilfield Waste (NOW)

- NOW wastes containing NORM concentrations less than 30 picocuries per gram of Ra-226 or Ra-228 can be treated at a commercial nonhazardous oilfield waste facility. If the NORM concentrations exceed 200 picocuries per gram of Ra-226 or Ra-228, it must be treated at a specifically licensed commercial NORM/NOW facility. Prior to transport, the licensee must file Form UIC-23 with DNR/OC (Attachment 3).
- The licensee must provide proof that tests to determine the activity level were conducted on any NOW waste suspected to have NORM concentrations prior to disposal or transfer.
- The DNR/OC and the Department will consider proposals for downhole disposal of NORM solids and NORM contaminated tubular goods and equipment in wells which are to be plugged and abandoned. For this, the licensee must submit Form UIC-30 (Attachment 4) in the following sequence:
 - Form UIC-30 must be submitted to DNR/OC, Injection and Mining Division.
 - Once approved, a copy is forwarded to the Department and the licensee.
 - The Department will assess the request and, if all metrics are acceptable, issue an authorization to the licensee. The Department will not issue an authorization without receiving an approved Form UIC-30 from DNR/OC.
 - The licensee must submit Form RPD-34 to the Department (Attachment 5). If all metrics are acceptable, The Department will issue three letters of authorization to the applicant, specific license performing work, and notification to the parish government.
 - The licensee must notify both DNR/OC and the Department at least 24 hours prior to the first placement of NORM in the wellbore.
- In the instance where contaminated tubing or piping has been retrieved from a production well slated to be plugged and abandoned, the operator may place the tubing or piping back into the well for P/A activities under DNR/OC approval. Authorization from the Department will not be required in this situation, however, if transferring contaminated tubing or piping from a different well for disposal in a P/A, the licensee must follow the procedures as outlined above.

* Note: For utilization of orphan wells, licensees should contact DNR/OC.

- General licensees are allowed to leave flowlines and pipelines already buried underground in place provided that the following criteria are met:
 - A survey of the soil surface above or on contact with the buried pipelines is conducted and no reading exceeding 25 μ R/hr above background is observed. Special attention should be given to areas where changes in flow occur, such as elbows or restrictions in tubulars. The survey should be documented and maintained indefinitely showing:
 - The date of survey
 - Name of surveyor
 - Survey instrument (Make, model, serial number, calibration dates)
 - NORM general license number,
 - NORM site specific identification number
 - Pipeline/flowline origin and destination
 - Facility contact (name, email address, telephone number, physical address)
 - NORM contaminated facility address
 - Name of administrative authority of general licensee
 - The buried pipeline/flowline must be flushed to remove hydrocarbons and produced salt water in accordance with general industry standards and regulations.
 - The lease agreement allows the pipelines/flowlines to remain in place
 - * Note: If any readings exceed 25 μ R/hr above background, the licensee may request an exemption from the Department. An assessment of environmental damage due to pipeline/flowline retrieval or further isolation and an estimate of public exposure potential must be submitted in the exemption request. The Department will contact the licensee regarding its decision in writing and a copy will be shared along with pertinent documentation to DNR/OC.

IX. Manifest and Transportation Requirements (§1418)

Moving NORM waste is a necessary part of waste management for every facility. In addition to state regulations, the licensee must consider federal DOT regulations when transporting radioactive material. In Louisiana, the transfer of diffuse NORM waste or NORM contaminated equipment must be documented in the form of a manifest, Form RPD-37 (Attachment 2), and maintained by the licensee.

A. Manifest Requirements

- Must consist of the number of copies that will provide the licensee, each transporter, and the operator of the designated facility with one copy each for their records with the remaining copies to be returned to the licensee and other appropriate parties.
- On the manifest, the licensee must designate the treatment or storage facility
 - The facility must be appropriately licensed to handle NORM waste
 - If the licensee is unable to deliver the waste, a new licensed facility must be named in an updated manifest or the waste must be returned to the originating location
- General information concerning the nature of the NORM material and general guidelines for an emergency situation must accompany the shipment at all times.
- If NORM waste is transported out-of-state, the licensee is responsible for receiving the completed, signed manifest from the receiving facility, in addition to adhering to other state regulations and DOT transportation regulations.
- Prior to shipment, the licensee needs to get written confirmation that the intended receiving facility will accept the licensee's NORM waste.
- Upon receipt of a NORM waste shipment, the receiving party must document any irregularities between the manifest and the actual material to the Department.
- Required information on the manifest:
 - A RPD-37 from the Department

- The licensee's name, mailing address, telephone number, email address, and NORM general license number
- The name, Interstate Commerce Commission number (ICC#) and telephone number of each transporter
- The name, address, telephone number, email address, and NORM specific license number of the designated facility
- A description of the waste or contaminated equipment
- Total quantity of NORM in tons or pounds and the type and number of containers. An estimation will suffice.
- Licensee's signature of the certification, with date

B. Transportation

- During transportation, all NORM should be containerized and labeled appropriately (See VIII. Placarding and Labeling).
- Effort should be made in the shipment of NORM contaminated equipment to tape up all ends and openings of the equipment to prevent any loose contaminated material from being spilled or leaking.
- In instances where NORM contaminated equipment or diffuse NORM waste has been determined to have a total activity greater than 2000 picocuries per gram, licensees must consider transportation regulations from state and federal regulatory agencies (Attachment 6).

X. Placarding and Labeling

A. Equipment

- Equipment in use at a production facility determined to have an activity measured at 30 centimeters between
 - 50 μ R/hr to 2mR/hr are exempt from labeling purposes.
 - 2mR/hr to 5mR/hr, must restrict access.
 - 5mR/hr and above must restrict access and post a sign reading "Caution: Radiation Area".
- In consideration of the ALARA principle, the general licensee should communicate the presence of NORM by attaching a metal tag, plastic placard, or spray painted information on any equipment with NORM contamination.
- Contaminated equipment that is out-of-service should be labeled in accordance with LAC 33:XV.453. Equipment with activity readings of 2mR/hr and above must be handled as referenced above.

B. Containerized NORM Waste

- All containers containing NORM waste must be labeled in accordance with LAC 33:XV.453.A. including a durable, clearly visible label:
 - bearing the radiation symbol and the words, "CAUTION, RADIOACTIVE MATERIAL, NOTIFY CIVIL AUTHORITIES [or 'NAME OF COMPANY']" or "DANGER, RADIOACTIVE MATERIAL, NOTIFY CIVIL AUTHORITIES [or 'NAME OF COMPANY']".
 - Providing information such as the radionuclides present, an estimate of the quantity of radioactivity, the date for which the activity is estimated, radiation levels, kinds of materials, and mass enrichment.
- In addition, each container should have the following information labeled on them - the name of the company, the general or specific license number, the date it was placed in the container, and the exposure rate measured at the surface.
- The area in which the containers are stored should be made restrictive and be posted with "Caution: Radioactive Material".

C. Tubular Goods and Pipe

- Tubular goods and pipe in storage are not required to be labeled in accordance with LAC 33:XV.453. However, the storage area may be required to be restricted or posted depending on the radiation level.

XI. Fees

Upon The Department's receipt of Form RPD-36, the licensee will be sent an invoice. Subsequent invoices will be sent annually for each NORM site or NORM field. For fee categories, the licensee should obtain a copy of LAC 33:XV, Chapter 25. An identification number will be assigned to each NORM site or NORM field. Each identification number will have a suffix code that will indicate the type of site (Figure 5).

Figure 5: Departmental Suffix Codes

Identification Codes and Common Abbreviations			
Code	Description	Code	Description
BG	Barge	MP	Manufacturing Plant
CI	Contaminated	MS	Miscellaneous
CL	Contaminated Land	PF	Production Facility
CP	Chemical Plant	PL	Pipeline
DS	Drum Storage	PT	Pit
EQ	Equipment	PY	Pipe Yard
FD	Oil and Gas Field	R	Refinery
FI	Field Identification	TB	Tank Battery
FS	Field Storage	TK	Tank
GA	Gas Station	WH	Warehouse

XII. References and Attachments

For additional information or clarification, contact the Department of Environmental Quality, Emergency & Radiological Services Division at (225) 219-3041.

All correspondence should be sent to:

Department of Environmental Quality
Emergency & Radiological Services Division
Radiation Licensing Section
P.O. BOX 4312
Baton Rouge, LA 70821-4312

Attachment 1
FORM RPD-36



NORM SITE NOTIFICATION FORM
 Subject to General Licensure
DEPARTMENT OF ENVIRONMENTAL QUALITY
EMERGENCY & RADIOLOGICAL DIVISION
LICENSING & REGISTRATIONS SECTION
POST OFFICE BOX 4312
BATON ROUGE, LOUISIANA 70821-4312
PHONE: (225) 219-3041 FAX: (225) 219-3154

FOR OFFICE USE ONLY
GENERAL LICENSE #
NORM FACILITY ID#
AI#

Form RPD-36 (Rev 6/06)

This form is for

- Site Registration
 Site Release
 Record Update

NORM NOTIFIER INFORMATION

NORM General License Number: LA- _____ -N01	Agency Interest (AI) Number:	Federal ID#:
Notifier Name:		
Physical Address: No. & Street	City & State	Zip Code Parish
Mailing Address: No. & Street	City & State	Zip Code
Billing Address: No. & Street	City & State	Zip Code
Primary Contact:	Job Title:	
Telephone #: ()	Fax#: ()	

NORM SITE INFORMATION

Type of Site (i.e. well site, production facility, pipe yard, drum storage, refinery, etc.):				
Facility Name or Well Name:			Well Serial # or Facility ID#:	
Field Lease Name (if applicable):			Field ID#:	
Physical Location/Address:				
Parish:			Location Phone #: ()	
Directions to Site (origin point from nearest city limits):				
Briefly Describe Site (size, terrain, structures):				
Describe How This Site Became Subject to Norm Regulations/Type of Contamination:				
Section	Township	Range	Latitude _____ ° _____ ' _____ "	Longitude _____ ° _____ ' _____ "

SURVEY INFORMATION

Survey Date:		BACKGROUND READING (micro roentgens/hr):	
Surveyor's Name & Company Affiliation:			
Radiation Instrument Used:		Calibration Date:	
Highest Exposure Reading Measured on a Piece of Equipment (micro roentgens/hr):		Highest Exposure Reading Measured on the Ground/or Solids (microroentgens/hr):	
Concentration:	Isotope	Activity (picocuries per gram)	TOTAL ACTIVITY (picocuries per gram)
	! Radium 226		
	! Radium 228		
	! Other NORM radionuclide(s) _____		
Approved/Accredited Laboratory		Agency Interest Number of Laboratory	

ADDITIONAL INFORMATION REQUIRED FOR SITE RELEASE REQUESTS

1. Type of contamination, (i.e., soil, piping, heater treater, etc.)
2. Location of remediation or decontamination activities
 - a. on site – copy(ies) of Form RPD-35 Temporary Jobsite Notification indicating the specific licensee(s) that performed the work
 - b. off site – the specific licensee/facility and copy(ies) of Form RPD-37 NORM Waste Manifest indicating transfer
3. Copy of closeout survey, sample results (pCi/g for soil) performed after cleanup, and qualifications of person who performed survey
4. Contact person (with phone number) for facility to be released (person to accompany DEQ inspector out to the facility location) Contact person must be knowledgeable about facility NORM contamination and/or cleanup operations performed at facility
5. Records indicating the whereabouts and status of NORM waste and/or contaminated equipment transferred from the site including copy(ies) of Form RPD-37 NORM Waste Manifest to specifically licensed treatment, decontamination, storage, or disposal facilities
6. Results of tests, experiments, or any other analyses relating to backfill of excavated areas, closure and sealing
7. Any new information regarding the environmental impact of closure activities and long-term performance of the NORM site

****PLEASE NOTE****

The Department does not consider a Plugged & Abandoned report as confirmation or verification that the previously reported NORM contamination has been removed.

WEB LINKS

Name	Type	Link
RPD-34	REQUEST FOR DISPOSAL IN A WELL TO BE P & A	http://www.deq.louisiana.gov/portal/tabid/240/Default.aspx
RPD-35	TEMPORARY JOBSITE NOTIFICATION	http://www.deq.louisiana.gov/portal/tabid/240/Default.aspx
RPD-36	NOTIFICATION OF A NORM SITE	http://www.deq.louisiana.gov/portal/tabid/240/Default.aspx
RPD-37	NORM WASTE MANIFEST	http://www.deq.louisiana.gov/portal/tabid/240/Default.aspx
DRC-3	NOTICE TO EMPLOYEES-RADIATION NOTICE	http://www.deq.louisiana.gov/portal/tabid/240/Default.aspx
LAC 33:XV	RADIATION PROTECTION REGULATIONS	http://www.deq.louisiana.gov/portal/Default.aspx?tabid=1674

CERTIFICATION

Signature (Responsible Party/Company Representative)	Notification Date
Name (Print)	Job Title

Attachment 2
FORM RPD-37



Louisiana Department of Environmental Quality
Emergency and Radiological Services Division
P.O. Box 4312
Baton Rouge, LA 70821-4312
Phone: (225) 219-3041 Fax: (225) 219-3154

PLEASE PRINT OR TYPE

NORM WASTE MANIFEST		1. Page 1 of ____		2. Generator's NORM Facility ID #		
3. Generator's or Shipper's ¹ Name and Mailing Address (Check as apply) ¹ Generator ¹ Shipper				5. Generator's General License # ²		
4. Phone ()						
6. Transporter #1 Company Name				8. Transporter #1's ICC/USDOT/MC #		
7. Phone ()						
9. Transporter #2 Company Name				11. Transporter #2's ICC/USDOT/MC #		
10. Phone ()						
12. Designated Commercial Facility Name (Check as apply) ¹ Disposal ¹ Storage ¹ Decontamination				14. Facility's Specific License #		
13. Phone ()						
If the designated facility is not a commercial facility, complete items 15 & 16 (Check as apply) ¹ Disposal ¹ Storage ¹ Decontamination						
15. Facility name (if applicable) and location:						
16. Phone ()						
17. Description of NORM waste (e.g., scale, soil, sludge) or contaminated equipment (e.g., heater treater, tubulars). Enter US DOT description if required.	18. MicroR/hr Reading	19. Activity Concentration pCi/gm	20. Number of Containers	21. Container Type	22. Total Quantity	23. Unit Wt/Vol
a.						
b.						
c.						
24. Special Handling Instructions and Additional Information						
25. Generator's certification: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport according to applicable international and national government regulations.						
Generator's Printed Name			Signature		Date	
Shipper's Printed Name			Signature		Date	
26. Transporter 1 Acknowledgement of Receipt of NORM						
Printed Name			Signature		Date	
27. Transporter 2 Acknowledgement of Receipt of NORM						
Printed Name			Signature		Date	
28. Designated Facility Owner or Operator: Certification of Receipt of NORM						
Printed Name			Signature		Date	

IF SPILLED IN LOUISIANA CALL THE DEQ HOTLINE at (225) 765-0160.

¹ Shipper denotes a decontamination or treatment facility.
² Or Shipper's Specific License #

Attachment 3
FORM UIC-23



REQUEST TO TRANSPORT E&P WASTE TO COMMERCIAL FACILITIES OR TRANSFER STATIONS

MAILING ADDRESS:
 OFFICE OF CONSERVATION
 ENVIRONMENTAL DIVISION
 P.O. BOX 94275
 BATON ROUGE, LA 70804-9275

PHYSICAL ADDRESS:
 OFFICE OF CONSERVATION
 ENVIRONMENTAL DIVISION
 617 N. THIRD ST., 8TH FLOOR
 BATON ROUGE, LA 70802

UIC-23

E-Mail: Environmental-Div@la.gov

Fax: 225-242-3505

Fee: \$150 per request

1. COMPANY NAME	2. CONTACT NAME	
3. COMPANY MAILING ADDRESS (including city, state & zip code)		
4. CONTACT EMAIL ADDRESS	5. TELEPHONE NUMBER	6. FAX NUMBER
7. BILLING ADDRESS	8. EMAIL ADDRESS (Invoice and Approval or Denial will be sent to this address)	
9. BILLING CONTACT	10. BILLING PHONE NUMBER	11. PO NUMBER (or Other Billing Number)
12. TYPE OF E&P WASTE (as defined on back)		13. AMOUNT OF WASTE (in BARRELS)
<input type="checkbox"/> 01 <input type="checkbox"/> 02 <input type="checkbox"/> 03 <input type="checkbox"/> 04 <input type="checkbox"/> 05 <input type="checkbox"/> 06 <input type="checkbox"/> 07 <input type="checkbox"/> 08 <input type="checkbox"/> 09 <input type="checkbox"/> 10 <input type="checkbox"/> 11 <input type="checkbox"/> 12 <input type="checkbox"/> 14 <input type="checkbox"/> 15 <input type="checkbox"/> 16 <input type="checkbox"/> 50 <input type="checkbox"/> 99 (describe)		
14. DESCRIBE WASTE TYPE 99 (if applicable)		
15. DESCRIBE HOW WASTE WAS GENERATED		
16. SOURCE OF E&P WASTE (DNR WELL SERIAL NUMBER, OCS LEASE, FACILITY ID)		
17. NORM SCREEN (Field Measurement of Naturally Occurring Radioactive Material)		
	BACKGROUND: microR/hr or pci/gr	WASTE: microR/hr or pci/gr
18. ESTIMATED COMPLETION DATE OF ABOVE OPERATION	19. EMERGENCY CONTACT PERSON	20. EMERGENCY PHONE NUMBER
21. COMMERCIAL FACILITY OR TRANSFER STATION OPERATOR	22. COMMERCIAL FACILITY OR TRANSFER STATION LOCATION	23. SITE CODE
24. TRANSPORTER NAME		25. PSC CODE

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this report and all attachments and that, based on my personal knowledge or inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

26. PRINT NAME	27. TITLE
----------------	-----------

SIGNATURE: _____ **Date:** _____

A copy of this form is to be attached to the Original copy of the manifest (UIC-28) form.

FOR CONSERVATION USE ONLY	
Issued UIC-23 Permit No: _____	Fee Paid <input type="checkbox"/> Invoice No. _____
Waste Type _____ Disposition _____	
This Approval expires on: _____	
Approved By: _____	Date: _____
Denied By: _____	Date _____ Reason _____

FORM UIC-23 INSTRUCTIONS

Offshore and/or Out-of-State Producer/Operators:

Offshore and/or Out-of-state producer/operators of oil and/or gas wells may be eligible to establish an Offshore/Out-of-State Waste Generator Code with the Office of Conservation to be used to transport E&P Waste to commercial facilities in lieu of completion of Form UIC-23. Contact the Office of Conservation, Environmental Division at 225-342-8244 for additional details.

Other Companies in the Oil and Gas Industry:

Other oil and gas industry companies (i.e. companies that do not possess a current Office of Conservation producer/operator code or a current offshore/out-of-state waste generator code) must obtain authorization from the Environmental Division by submitting a completed (acceptable) Form UIC-23 to transport E&P Waste to commercial facilities or transfer stations.

* * * * *

1. Requests to transport E&P Waste to commercial facilities or transfer stations (in lieu of a current producer/operator code or current offshore/out-of-state waste generator code) will be approved on a case-by-case basis only after review of a completed Form UIC-23 and favorable site inspection (if deemed necessary). If the request is approved, use the UIC-23 Permit Number on the E&P Waste Shipping Control Ticket (manifest) in lieu of the generator code. A copy of this approved form must accompany the manifest to its final destination.
2. Provide the name of the company, mailing/billing addresses (and physical address if different), name of contact person, telephone number, fax number and/or email address to receive any permit correspondence.
3. Check the box for the type of waste generated that coincides with the wastes listed below and provide the amount of waste in barrels. Describe other (99) wastes in detail.
4. Describe how the waste was generated.
5. Indicate the source of the waste generated (well names & serial numbers for state wells; company, area, block, OCSG number and well number of federal lease wells offshore). If multiple wells, attach a list of wells/locations to the permit request.
6. Each UIC-23 request for solids should include a field measurement of radioactivity performed according to Department of Environmental Quality procedures. Give background and waste reading.
7. Indicate the name and site code of the commercial facility or transfer station where the waste is to be taken (destination).
8. Provide the name and PSC Code of the proposed transporter of the waste.
9. For review, submit completed and legible Form UIC-23 to the Office of Conservation, Environmental Division, using the contact information on the form or via E-Mail at Environmental-Div@la.gov.
10. A filing fee as set forth by Act 362 of the 2015 Louisiana Legislative Regular Session of \$150.00 is required for each permit requested. Make checks payable to "Office of Conservation". An invoice may be provided via email to pay via credit card.
11. A copy of the approval/denial will be provided to the generator via email or fax and to the commercial facility or transfer station indicated on the form.

* * * * *

Exploration and Production (E&P) waste is waste generated by the exploration, development, or production of crude oil or natural gas wells and which is not regulated by the provisions of the Louisiana Hazardous Waste Regulations and the Federal Resource Conservation and Recovery Act, as amended. E&P waste include the following waste types (see LAC 43:XIX.501).

- | | |
|----|--|
| 01 | Salt water (produced brine or produced water), except for salt water whose intended and actual use is in drilling, workover or completion fluids or in enhanced mineral recovery operations, process fluids generated by approved salvage oil operators who only receive oil (BS&W) from oil and gas leases, and natural gas plant processing waste fluid which is or may be commingled with produced formation water. |
| 02 | Oil-base drilling wastes (mud, fluids and cuttings) |
| 03 | Water-base drilling wastes (mud, fluids and cuttings) |
| 04 | Completion, workover and stimulation fluids |
| 05 | Production pit sludges |
| 06 | Storage tank sludge from production operations, onsite and commercial saltwater disposal facilities, salvage oil facilities (that only receive waste oil [BS&W] from oil and gas leases, and sludges generated by service company and commercial facility or transfer station wash water systems |
| 07 | Produced oily sands and solids |
| 08 | Produced formation fresh water |
| 09 | Rainwater from firewalls, ring levees and pits at drilling and production facilities |
| 10 | Washout water and residual solids generated from the cleaning of containers that transport E&P Waste and are not contaminated by hazardous waste or material: washout water and solids (E&P Waste Type 10) is or may be generated at a commercial facility or transfer station by the cleaning of a container holding a residual amount of E&P Waste |
| 11 | Washout pit water and residual solids from oilfield related carriers and service companies that are not permitted to haul hazardous waste or material |
| 12 | Nonhazardous natural gas plant processing waste solids. |
| 14 | Pipeline test water which does not meet discharge limitations established by the appropriate state agency, or pipeline pigging waste, i.e., waste fluids/solids generated from the cleaning of a pipeline |
| 15 | E&P Wastes that are transported from permitted commercial facilities and transfer stations to permitted commercial treatment and disposal facilities, except those E&P Wastes defined as Waste Types 01 and 06 |
| 16 | Crude oil spill clean-up waste |
| 50 | Salvageable hydrocarbons bound for permitted salvage oil operators |
| 99 | Other E&P Waste not described above, but generated by activities incidental to the drilling and production of oil and gas wells |
- and meet the EPA/RCRA exemptions criteria.



BOBBY JINDAL
GOVERNOR

State of Louisiana
DEPARTMENT OF NATURAL RESOURCES
OFFICE OF CONSERVATION

STEPHEN CHUSTZ
SECRETARY
JAMES H. WELSH
COMMISSIONER OF CONSERVATION

MEMORANDUM

To: Exploration & Production Waste Generators Not Possessing an Operator Code

From: James H. Welsh
Commissioner of Conservation 

Date: July 27, 2015

Subject: Established Form UIC-23 Fees

LAC 43:XIX.545.B requires those companies who do not possess an Office of Conservation operator code number to be approved prior to transporting E&P Waste to a commercial facility or transfer station using the Form UIC-23.

The Office of Conservation will be introducing new or adjusted fees for various forms and permits as approved under Act No. 362 of the 2015 Louisiana Legislative Regular Session.

Act No. 362 of the 2015 Louisiana Legislative Regular Session enacted on June 29, 2015 and effective on August 1, 2015 amends LRS 30:21.B.1 to establish a fee of \$150.00 for a permit granting approval to transport E&P Waste to a commercial facility or transfer station when utilizing Form UIC-23.

Beginning on August 1, 2015, all requests to transport E&P Waste to disposal must utilize the updated FORM UIC-23 (rev 07/2015) (attached) and will be subject to the \$150.00 fee. If approved, the authorization is limited to the time period set by the Office of Conservation.

For further assistance, please contact Daryl Williams at 225-342-7286 or by email at daryl.williams@la.gov.

F:\Environmental Division\E&P WASTE MANAGEMENT\UIC Forms\UIC23\MEMO UIC23 Fees 072715.doc

Environmental Division

Post Office Box 94275 • Baton Rouge, Louisiana 70804-9275 • 617 North 3rd Street • 9th Floor • Baton Rouge, Louisiana 70802
Phone (225) 342-8244 • Fax (225) 242-3505 • www.dnr.state.la.us/conservation
An Equal Opportunity Employer

Attachment 4
FORM UIC-30

Schematic Diagram of Well: (indicate location and depths of casing strings, cement plugs, NORM solids and/or tubing equipment, etc.)



1. Application to plug and abandon any well under the jurisdiction of the Office of Conservation which is to utilized for downhole disposal of NORM solids and/or NORM contaminated tubing/equipment, shall be made on Form UIC-30, Work Permit to Plug and Abandon a Well Utilized for NORM Disposal. Form UIC-30 is to be submitted to the Injection and Mining Division, P.O. Box 94275, Baton Rouge, Louisiana 70804-9275 for review. Call 504/342-5515 if you have any questions about completion of Form UIC-30.
2. This work shall be done according to the recommended practices in the LRPD Implementation Manual of Management of NORM in Louisiana and DNR/OC Statewide Order No. 29-B, LAC 43:XIX.137.
3. This application will be returned if not properly completed and signed.
4. The Department of Environmental Quality (DEQ), Office of Air Quality and Radiation, Radiation Protection Division, will be sent a copy of Form UIC-30 upon approval. If approved, a copy of Form UIC-30 must be attached to the application to DEQ to perform jobsite (NORM disposal) activities.

Well Serial Number: _____

NORM CHECK LIST
Form UIC-30

- ____ 1. Is well information correct and is the signature original?
- ____ 2. Is there a before and after well sketch?
- ____ 3. If casing is to be removed, will it expose any open hole?
- ____ 4. Is the shoe of the surface casing at least 100-feet below the base of the lowermost underground source of drinking water (USDW)?
- ____ 5. Will each set of production perforations be plugged with a 100-foot cement plug (minimum)?
____ If a Cast Iron Bull Plug (CIBP) is to be used, will there be 10-feet of cement on top of the CIBP?
- ____ 6. Will the bottom plug be tagged and the casing and bottom plug be tested to 1000 PSIG for 30 minutes with less than 100 PSI loss?
- ____ 7. Will the top of the NORM plug and/or NORM tubing be deeper than 100-feet below the shoe of the surface casing?
- ____ 8. Will the CIBP above the NORM plug be placed at least 50-feet below the shoe of the surface casing?
- ____ 9. Will the middle cement plug in the production/surface casing annulus and inside the production casing be 100-feet or greater and be 50/50 with the surface casing shoe?
____ If cement can not be circulated, will the production casing/surface casing annulus be squeezed and a 100-foot cement plug be placed on top of the CIBP?
____ If the annulus can not be squeezed, will 200-feet of cement be placed on top of the CIBP?
- ____ 10. Will the middle plug be tested to 1000 PSIG for 30 minutes with less than 100 PSI loss?
- ____ 11. Will the fluid between the cement plugs be 9.0 PPG or greater?
- ____ 12. Will the top plug be 100-feet or greater?
- ____ 13. Will the casing be cut 2-feet below ground level or 10-feet below the mud line?

**Department of Natural Resources
Office of Conservation
Injection and Mining Division**

**NORM Disposal Guidelines
Plugging and Abandonment Procedures**

Application to plug and abandon any well under the jurisdiction of the Office of Conservation which is to be utilized for downhole disposal of NORM solids and/or NORM contaminated tubing, shall be made on Form UIC-30, **Work Permit to Perform a NORM Plug and Abandonment**. Form UIC-30 is to be submitted to the Injection and Mining Division, P. O. Box 94275, Baton Rouge, Louisiana 70804-9275 for review.

The Department of Environmental Quality (DEQ), Office of Air Quality and Radiation, Nuclear Energy Division, will be sent a copy of Form UIC-30 upon completion of the review. If approved, a copy of Form UIC-30 must be attached to the application to DEQ to perform jobsite (NORM disposal) activities.

The following procedures shall be utilized by oil and gas operators for the disposal of NORM contaminated tubing and/or NORM solids into a well that is to be plugged and abandoned:

- a. Cement plugs in addition to those specified in the following procedure shall be placed in the well to contain high pressure sands, freshwater sands and as may be required by the Office of Conservation.
- b. A bottom cement plug of at least one hundred (100) feet in length shall be placed immediately above the uppermost perforated interval in the well. In multiple completed wellbores, sufficient cement shall be used to adequately isolate each perforated pool, one from the other. A cast iron bridge plug with a minimum of ten (10) feet of cement on top is acceptable in lieu of the one hundred (100) foot cement plug.
- c. The bottom cement plug shall be tagged and both the cement plug and production casing pressure tested to one thousand (1000) PSIG for thirty (30) minutes for integrity. More than 100 psi pressure loss in thirty (30) minutes constitutes loss of integrity. If loss of integrity cannot be corrected, the well is not a candidate for disposal of NORM contaminated tubing and/or NORM solids.
- d. Once mechanical integrity of the bottom cement plug and production casing is established, NORM contaminated tubing and/or NORM solids may be placed in the well. NORM solids shall be placed by the circulation method and spotted beginning at the top of the bottom casing plug. NORM solids may be placed as per above with NORM contaminated tubing, which may then be left in the well. NORM contaminated tubing shall be placed in the well so as not to disturb the integrity of the cement plug.
- e. NORM contaminated tubing and/or NORM solids shall be placed inside the production casing at a depth deeper than one hundred (100) feet below the surface casing shoe. A cast iron bridge plug shall then be placed at least fifty (50) feet below the base of the surface casing shoe.

NORM Disposal Guidelines

PAGE 2

f. A cement plug of at least one hundred (100) feet in length shall be placed in the production/surface casing annulus and inside the production casing so that cement shall extend at least fifty (50) feet below the surface casing shoe. This cement shall be placed by pumping down the annulus using a calculated displacement. In the event that cement cannot be pumped down the annulus, the cement shall be placed by perforating the production casing at least fifty (50) feet below the surface casing shoe and circulating, if possible or if not, by squeezing the outer cement plug into the annulus. A cement plug of at least one hundred (100) feet in length shall then be placed in the production casing above the bridge plug. The production casing cement plug shall be tagged and pressure tested to one thousand (1000) PSIG for thirty (30) minutes. In the event that cement cannot be circulated or squeezed into the annulus, a cement plug of at least two hundred (200) feet in length shall be placed immediately above the cast iron bridge plug in the production casing. The production casing cement plug shall be tagged and pressure tested to one thousand (1000) PSIG for thirty (30) minutes for integrity (more than 100 psi pressure loss in thirty (30) minutes constitutes loss of integrity).

g. A top cement plug of at least one hundred (100) feet in length shall be placed at the top of the well in the production/surface casing annulus and inside the production casing.

h. General Requirements:

- i. Mud-laden fluid between cement plugs shall be of a density of at least nine (9.0) pounds per gallon.
- ii. NORM contaminated tubing and/or NORM solids shall not be placed in any well where production casing has been retrieved or in any open hole. NORM contaminated tubing and/or NORM solids shall not be disposed of in any wells where the bottom cement plug or casing fails the pressure integrity test. NORM contaminated tubing and/or solids shall not be placed in any well in which the surface casing is not set at least one hundred (100) feet below the base of the lowermost USDW.
- iii. Well casing(s) shall be cut a minimum of two (2) feet below plow depth on all land locations and a minimum of ten (10) feet below the mud line on all water locations. Explosives shall not be used to remove the casing(s)/wellhead.
- iv. NORM contaminated solids shall not be mixed with any cement slurry that is to be used as a plug.
- v. Except where otherwise provided in this procedure all cement plugs shall be placed by the circulation method and hydrostatically balanced. The well must be in a static condition at the time cement plugs are placed in the well.

Attachment 5

RPD-34



NORM DISPOSAL IN A WELL TO BE P&A
Department of Environmental Quality
Emergency & Radiological Services Division
Licensing & Registrations Section
Post Office Box 4312
Baton Rouge, Louisiana 70821-4312
Phone: (225) 219-3041 Fax: (225) 219-3154

FOR OFFICE USE ONLY
GENERAL LICENSE #
GENERAL LICENSEE AI#
SPECIFIC LICENSE #
SPECIFIC LICENSEE AI#

Form RPD-34 (Rev 7/03)

OPERATOR INFORMATION

NORM General License Number:		Agency Interest (AI) Number:	
Name of Operator/General Licensee:			
Physical Address: No. & Street	City & State	Zip Code	Parish
Mailing Address: No. & Street	City & State	Zip Code	
Primary Contact:	Job Title:	Telephone Number:	

DISPOSAL MATERIAL/WASTE INFORMATION

Contaminated Tubing (feet/diameter):	Average Exposure Rate (microR/hr):
NORM Solids (total grams):	Total Radium Activity of Solids (pCi): (volume (grams) x average activity (pCi/grams) = pCi)
Generating Field(s) and/or Location(s):	

P&A WELL INFORMATION

Well Name:	Well Serial Number:	
Field Name:	Field ID Number:	Parish:
Describe Site Specific Activities:		

Directions to Job Site:

Local Ordinances/Permits Required?	If Yes, Have They Been Obtained?	List:
Landowner Notified?	Projected Date Work Begins:	Contractor and/or Operator NORM Site Supervisor:
NORM Specific Licensed Contractor (as required by the Department):	License Number:	Agency Interest (AI) Number:

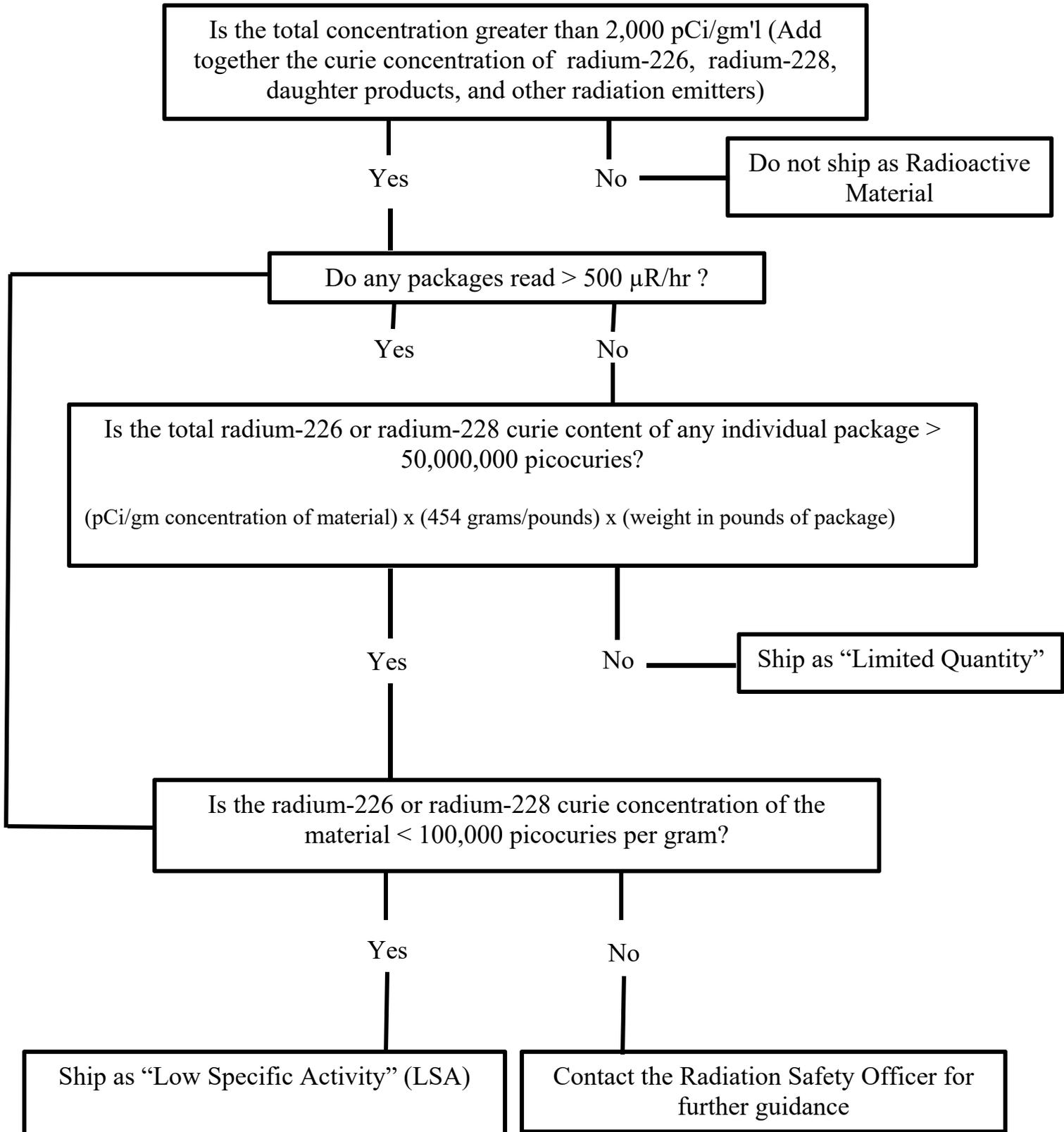
CERTIFICATION

Signature (Responsible Party/Company Representative)	Name (Print)	
Job Title	Phone Number	Date

NOTE: This form is to be completed by general licensees to obtain authorization to have NORM waste or contaminated equipment placed into a P&A well. Authorization is granted by a prepared letter signed by the Louisiana Department of Environmental Quality.

Attachment 6
Transportation Guidelines

NORM SHIPPING CATEGORY DECISION FLOW CHART



LIMITED QUANTITY SHIPMENTS

GENERAL REQUIREMENTS

49CFR173.421

Basic Description:

Radioactive Material, excepted package • limited quantity; UN2910.

1. Maximum Allowed Activity Level:

The total activity of radium-226 or radium-228 shipped shall not exceed 50,000,000 picocuries per individual package contained in the shipment. [49CFR173.423, Table 7], Material package limit column]. The following equation may be used to calculate the total radium-226 or radium-228 activity:

$(\text{pCi/gm radium-226 or 228 concentration}) \times (454 \text{ grams/pound}) \times (\text{weight in pounds of package being shipped})$

Note: 50,000,000 picocuries radium-226 or radium-228 activity can be exceeded by shipping a package weighing 3,671 pounds, contaminated at 30 pCi/gm radium-226 or radium-228, or by shipping a package weighing 22,026 pounds, contaminated at 5 pCi/gm radium-226 or radium-228.

2. Maximum Allowed Radiation Levels:

Radiation levels on the external surfaces of packages shall not exceed 500 uR/hr (0.005 mSv/hr) [49CFR173.421.b].

3. Package Requirements:

A strong tight container must be used [49CFR173.421.a].

4. Shipping Label Requirements

Packages shipped as Limited Quantity are exempt from D.O.T. shipping label Requirements [49CFR173.421]. Note: Containers of NORM still need to be labeled in accordance with the Louisiana Administrative Code, Title 33, Part XV, Chapter 4, and Section 453.

5. Package Marking Requirements:

The outside of the inner packaging, or if there is no inner packaging, the outside of the packaging itself, must bear the word "Radioactive" [49CFR173.421.d].

6. Special Restrictions of the Package:

The package cannot contain more than 15 grams of uranium-235.

7. Vehicle Placard Requirements:

Vehicle placards are not required for Limited Quantity shipments [49CFR172.500.3].

a. Special Communication Requirements:

The following statement must be contained in or on the package, with the packing list, or otherwise forwarded with the package: "This package conforms to the conditions and limitations specified in 49CFR173.421 for radioactive material, excepted package - limited quantity of material, UN2910". [49CFR173.421-1.a].

9. Maximum Allowed Contamination Levels:

The maximum contamination levels on the external surfaces of the packages shall not exceed:

[49CFR173.433.a, Table 11].

Alpha	220 dpm/100cm ²
Beta/Gamma	2,200 dpm/100cm ²



LSA SHIPMENTS, EXCLUSIVE USE VEHICLES

GENERAL REQUIREMENTS

49CFR173.425

Basic Description:

Radioactive material, LSA, n.o.s.; UN2912.

1. Maximum Allowed Activity Concentration Level

The maximum radium-226 or radium-228 concentration of the material being shipped shall not exceed 100,000 picocuries per gram (49CFR173.403.n and 49CFR173.425).

2. Maximum Allowed Radiation Levels

The maximum radiation levels for LSA shipments made in exclusive use vehicles shall not exceed the following:

(49CFR173.441]

Non-Exclusive Use or an

Exclusive Use Open Transport Vehicle

200 mrem/hr on the package

Exclusive Use - Closed Transport Vehicle

1,000 mrem/hr on the package

200 mrem/hr on the vehicle

10 mrem/hr at any point 2 meters from the vehicle

2 mrem/hr in the cab of the vehicle

3. Package Requirements

A strong tight container must be used [49CFR173.425.1].

4. Shipping Label Requirements

White I, Yellow II, or Yellow III shipping labels shall be affixed to packages in accordance with 49CFR172.400.

Note 1: D.O.T. shipping labels are not required to be affixed to packages of low specific activity radioactive material when transported under the below requirements: [49CFR173.425.b, 49CFR172.400.a.7] Note 2:

Containers of NORM still need to be labeled in accordance with the Louisiana Administrative Code, Title 33, Part

. XV, Chapter 4, Section 453.

1. Materials must be packaged in strong, tight packages so that there will be no leakage of radioactive material under conditions normally incident to transportation.
 2. Package: must not have any significant removable surface contamination (see 49CFR173.443 for contamination limits, or paragraph 7 below, titled "Maximum Contamination Levels").
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3. External radiation levels must comply with 49CFR173.441. (see paragraph 2 above, titled "Maximum Radiation Levels" for radiation level limits).
4. Shipments must be loaded by the consignor and unloaded by the consignee from the conveyance or freight contained in which originally loaded.
5. There must be no loose radioactive material in the conveyance.
6. The shipment must be braced so as to prevent shifting of lading under conditions normally incident to transportation.
7. Except for shipments of un-concentrated uranium or thorium ores, the transport vehicle must be placarded with the placards prescribed in accordance with 49CFR172, subchapter F, as appropriate.
8. The exterior of each package must be stenciled or otherwise marked "Radioactive - LSA". Packages, with a capacity of 110 gallons or less, that contain a hazardous substance, must be stenciled or otherwise marked with the letters "RQ" in association with the above description. For vessel transportation, packages that contain a marine pollutant must be marked in accordance with 49CFR172.322.
9. Specific instructions for maintenance of exclusive use shipment controls must be provided by the shipper to the carrier. Such instructions must be included with the shipping paper information.
10. Transportation by aircraft is prohibited.

When affixing shipping labels, the following requirements must be met:

1. Two labels must be affixed to each package [49CFR173.403.f].
2. Labels shall not be affixed to the bottom of a package (49CFR173.406.a.i).

5. Package marking Requirements:

The exterior of each package must be stenciled or otherwise marked "Radioactive - LSA".

Packages with a capacity of 110 gallons or less, that contain a hazardous substance, must be stenciled or otherwise marked with the letters "RQ". [49CFR173.425.b.8].

6. Vehicle Placard Requirements

Radioactive" placards must be affixed to all four sides of vehicles transporting LSA materials. [49CFR173.425.b.7].

7. Maximum Allowed Contamination Levels:

The maximum contamination levels associated with a LSA shipment are as follows

[49CFR173.443]:

Non-Exclusive Use Vehicle

Alpha:
220 dpm/100cm²
Beta/gamma:
2,200 dpm/100cm²

Exclusive Use Vehicle Beginning
During. and End

Alpha:
220 dpm/100cm² 2,200 dpm/100cm²
Beta/gamma:
2,200 dpm/100cm² 22,200 dpm/100cm²

8. Other Special Requirements

Shipments of LSA materials must be loaded by the consignor and unloaded by the consignee from the conveyance or freight container in which they were originally loaded [49CFR173.425.b.4].

Shipments of LSA materials must be braced so as to prevent shifting of lading under conditions normally incident to transportation [49CFR173.425.b.6].
