

The NORM Report

Naturally Occurring Radioactive Material Contamination
SUMMER 1995

Index

Regulations Update	1
State	1
Federal	11
CRCPD	11
Canada	12
Export & Import Radwaste	14
Lionhead Engineering	14
Selective Tools	15
Barnwell Reopens	15
EPA and NORM	16
National Needs in	
Ionizing Radiation	17
ADA Consultants	17
The Emperor Has No Clothes	18
Corpex	18
SE International	18
Meetings Calendar	19
Stan Huber Consultants	20
AMBAR, Inc.	21
Coal Slag & NORM	22
Growth Energy	
Services Inc.	22
Envirocare	23
American Radiation	
Services Inc.	24
Campbell Wells Corp.	25
Radiation & Insurance	26
Comparison of State	
Regulations	27
NORM Course	28

Regulations for the Control of NORM - Update

The status of regulations for the control of NORM is summarized below for all 50 states. Since NORM contamination is not limited to the petroleum industry, some of the non-petroleum states are also drafting or preparing to draft NORM regulations. The status of NORM regulations in the federal government as well as in Canada is also summarized below. Each regulatory agency was contacted during the last two weeks of September, 1995. (

The last states to enact NORM regulations were New Mexico and South Carolina. Louisiana, Mississippi, Arkansas, Texas and Georgia also have enacted specific regulations for the control of NORM. Several states are in various stages of drafting NORM regulations.

The CRCPD draft of suggested guidelines for the control of NORM continues to be reviewed after receiving voluminous comments on its latest draft.

Several states are continuing to revise their general regulations for the control of radiation to include the revised 10 CFR 20 regulations that became effective January 1, 1994. The revised 10 CFR 20 incorporates modern radiation protection philosophy for the establishment of new dose limits and ALARA programs. The changes closely follow the recommendations of the International Commission of Radiological Protection (ICRP) and the National Council on Radiation Protection and Measurements (NCRP).

There currently are no federal regulations specifically for the control of NORM.

The *Guidelines for the Handling of NORM in Western Canada* were issued in August 1995. See pages 12-14 for comments on this excellent document.

Enactment of regulations specifically for the control of NORM will require compliance by companies with NORM contamination. Companies should already be in compliance with state general regulations for the control of radiation and the OSHA radiation regulations.

A summary of the status of NORM regulations in the individual states, the federal government and Canada follows:

ALABAMA

Alabama is still redrafting their proposed NORM regulations. There is no timetable for the regulations to be adopted. There

has been some recent interest in plugging wells, but there have been no requests for NORM regulations.

(Continued on page 2)

The NORM Report

is published quarterly by

Peter Gray & Associates

P.O. Box 470932

Tulsa, OK 74147

918/492-5250

ALASKA

Alaska is attempting to get a radiation program going. It is being proposed that the lack of specific NORM regulations be addressed in the fiscal year starting July 1, 1996, by starting to develop NORM regulations and working with all affected parties on the regulations. In addition to the NORM contamination in the petroleum industry, Alaska has other NORM problems including such areas as welding flux. Alaska's general regulations for the control of radiation were written in 1973 and amended in 1978 and haven't been revised since.

ARIZONA

All radioactive materials, including NORM, are addressed in Arizona's general regulations for the control of radiation. At present, NORM is not specifically addressed, but consideration is being given to enacting NORM regulations at a later date, possibly in 1996.

ARKANSAS

There have been no changes in the Arkansas NORM rules and regulations. However, one change under consideration is to change the NORM exemption from 25 microR/hr above background to 50 microR/hr including background. This will make the Arkansas regulations similar to the Texas and Louisiana NORM regulations in this respect.

CALIFORNIA

A meeting was held with the Department of Oil and Gas on September 19th to discuss the draft report detailing the results from the survey of petroleum facilities for NORM contamination. Water, brine, soil and other appropriate samples were taken for laboratory analysis. The survey was made as a preliminary to drafting NORM regulations. Each affected agency has modified the survey draft

report and meetings are being held in an attempt to arrive at a final version acceptable to all the parties. None of these draft report versions have been released to the public yet. Although California doesn't appear to have NORM problems in the petroleum area as severe as in other states, e.g., Louisiana, Mississippi, and Texas, it does have areas that need attention. Other areas such as some of the state mining operations, also have NORM problems.

COLORADO

There has been no progress in the enactment of the proposed NORM regulations in Colorado.

CONNECTICUT

The Connecticut Department of Environmental Protection is currently reviewing a prepared draft of NORM regulations. It is slowly working its way through the approval process. After the DEP has approved the draft, the proposed regulations will be sent to Legal and then to the State Legislature for enactment. There is no timetable for final enactment of the Connecticut NORM regulations.

DELAWARE

There are no specific regulations for the control of NORM in Delaware. NORM, NARM and other radioactive materials are considered to be covered in the general regulations for the control of radiation enacted in 1983. A revision of the general regulations became effective September 1, 1995. This revision tightened the compliance aspect of the regulation. No specific NORM regulations are proposed at present.

FLORIDA

Florida's Office of Radiation Control in the Department of Health and Rehabilitation Services

has recently hired a new staff member who is in the process of researching NORM prior to preparing a draft of NORM regulations. There is no timetable for NORM regulations. The need to have specific regulations is still under consideration.

GEORGIA

Georgia's regulations for the control of NORM became effective in October, 1994. Since then only very minor changes have been made, e.g., correction of typos, etc. No revisions of the regulations are planned in the near future.

HAWAII

Hawaii has no specific regulations for the control of NORM. The state has a set of proposed rules that are slated to replace the antiquated rules for the control of radiation. These rules are expected to cover NORM. The timetable for finalizing these rules is uncertain. The proposed rules have been in the administrative review process for two years. The designated attorney is expected to "work" on the rules in the very near future. Hawaii is expecting to have the new rules for controlling radiation (and NORM) within two years.

Hawaii doesn't have any particular problems with NORM at this time. Although Hawaii does not have petroleum production, it does have geothermal wells on the big island. Possible NORM contamination in these geothermal wells has not been addressed.

There is also some concern about radioactivity and radiation contamination in the states military posts and bases, including old radium gauges and instruments. There may additionally be some NORM associated with the dry dock activities in the state.

(Continued on page 3)

IDAHO

Idaho has no regulations for the control of NORM and none are planned for the near future. There has been no indication from the state legislature or anybody else concerning interest in the regulations. There are provisions in the general regulations for the control of radiation that can be used for NORM problems if the need arises.

ILLINOIS

The Division of Radioactive Materials in the Illinois Department of Nuclear Safety has prepared a draft of proposed NORM regulations.

The comments received by the CRCPD on their latest draft of suggested regulations for the control of NORM are being reviewed to determine if changes in Illinois's draft of proposed NORM regulations are warranted.

It had earlier been thought that the final proposal would be ready earlier this year but now there is no timetable for final approval of the NORM regulations.

INDIANA

No new regulations for the control of NORM have been enacted or proposed in Indiana. There have been a few incidents involving NORM contaminated materials in scrap yards, etc.

IOWA

Iowa is reviewing the Part N draft and comments from the CRCPD. At the present time Iowa has not done anything on NORM and has no timetable for action on rules and regulations.

KANSAS

It is not known yet if any legislation will be introduced in the new legislative session concerning NORM.

With the present funding situation it is a struggle to keep up with the basic NORM inquiries and problems. The oil and gas industry is being encouraged to fund a study to determine the magnitude of the NORM problem in Kansas. The Department of Health and Environment has regulatory jurisdiction over NORM and recently issued a license to a company in Lawrence to clean up NORM but it would be easier if there were specific oil and gas NORM regulations.

KENTUCKY

At present there is nothing new in promulgating NORM regulations. There is considerable work in the Martha Oil Field to make and confirm measurements in the least contaminated areas hoping to be able to release some of the land for unrestricted use.

LOUISIANA

Louisiana has proposed a new draft of an implementation manual that reflects the 1995 revisions to the NORM regulations that went into effect January 20, 1995. It should be available now. There are significant differences from the previous implementation manual. Comments on the draft are welcome.

At the present time, Louisiana does not allow disposal of NORM wastes by injection into abandoned wells. This is predicated on legislation passed many years ago to prevent the DOE or DOD from bringing radioactive wastes into Louisiana for injection into salt domes. The wording of the legislation also prevents the injection of NORM wastes for disposal.

MAINE

Maine has general regulations for the control of radiation, but does not have specific NORM regulations. There may be an

apparent need for NORM regulations, however, especially for the control of water treatment wastes. Many water supplies in Maine contain significant concentrations of radium and radon.

Chemicals, e.g., ion exchange resins used in water treatment, can become quite "high" in radium. Carbon filters used to remove radon from water are becoming "hot" with radon daughter products, lead-210, bismuth-210, and polonium-210.

MARYLAND

Maryland has no specific regulations for the control of NORM. NORM is handled under the general radiation regulations. Scrap dealers sometimes report problem with radium-226, but NORM is not considered to be a large problem in the state.

MASSACHUSETTS

Massachusetts hasn't done anything about NORM yet. The state is planning and proceeding to become an Agreement State and NORM is considered to be of lower priority. The state is unaware of any major NORM problems in the state at the present time.

MICHIGAN

The status quo is being maintained in Michigan as far as the draft of NORM standards and guidelines is concerned. A decision is still being awaited as to whether to proceed with regulations.

MINNESOTA

Minnesota has no specific regulations for the control of NORM. The Pollution Control Agency has adopted by reference a statute in the Environmental Quality Board which says that natural materials may be buried.

(Continued on page 4)

MINNESOTA(continued)

The statute does not give any concentrations of these natural materials which may be disposed of by burying. There have been no other statutes or regulations enacted in Minnesota recently relating to NORM.

MISSISSIPPI

The Mississippi Legislature recently passed legislation giving the state Oil and Gas Board authority for NORM at the wellsite effective July 1, 1995. Once the petroleum leaves the wellsite, the Mississippi Department of Health has continued authority for NORM contamination.

The Department of Health has no new developments in its area of responsibility for NORM. The Department continues to be heavily involved in NORM.

The Oil and Gas Board has prepared a draft of their proposed NORM regulations. There will be a public hearing on the proposed rules in October prior to their approval by the Board.

MISSOURI

There are no specific NORM regulations in Missouri and none are planned at present. Occurrences of NORM problems are handled under the state's general regulations for the control of radiation. Some NORM regulations may be required in the future.

MONTANA

There have been no new developments applicable to NORM regulations in Montana. The regulations for the control of radiation have not been revised since 1980. NORM is not considered to be included in the radiation regulations. The Montana Department of Health and Environmental Sciences does have the statutory authority for NORM

regulations, but there is no funded program for their development.

NEBRASKA

There has been no change in the status of NORM regulations in Nebraska. Nebraska believes that NORM is included in their general regulations for the control of radiation. There are no plans for specific NORM regulations.

NEVADA

No specific NORM regulations have been proposed. Comprehensive statutes for the general control of radiation address NORM and NARM similarly.

NEW HAMPSHIRE

New Hampshire considers NORM to be a subset of NARM and the state has always regulated NARM in the same manner as by-product, source, and special nuclear materials are regulated as an Agreement State. One area that may not presently be regulated and may have to be is water treatment systems. There are significant quantities of radon in New Hampshire water supplies. Some water treatment facilities become quite "hot". Another potential NORM problem area is the granite sources in the state. Regulations similar to those adopted in Texas may be adopted in the future.

NEW JERSEY

New Jersey has prepared a draft of NORM standards that is currently under review by the Deputy Attorney General's office. It is hoped that their comments will be received shortly and the draft can be released as "an interested party" draft. Interested party means that everybody gets to comment, but it is not formal in the sense of a proposal yet-- it is a pre-proposal. This allows any comments to be addressed before it goes to the formal stage. It is expected that the review will be completed within a few months and it can be released

as an interested party draft around the first of the year. Meetings will be held in New Jersey for comments and the draft will be sent to anyone who wishes to provide input. Contact:

Dr. Jill Lipoti
Radiation Protection Programs
Division of Environmental
Quality
CN 415
Trenton, NJ 08625-0415
609-984-5636

for a copy.

NEW MEXICO

Subpart 14: Naturally Occurring Radioactive Materials(NORM) in the Oil and Gas Industry became effective August 3, 1995. Some of the pertinent sections in the regulations are given below:

1400. PURPOSE.

This Subpart establishes radiation protection standards for the possession, use, transfer, transport, storage and disposal of naturally occurring radioactive material(NORM) associated with the oil and gas industry, and which are not subject to regulation under the Atomic Energy Act of 1954, as amended. Nothing in these regulations relieves a licensee from abiding by the regulations of the New Mexico Water Quality Control Commission, other applicable state and federal law and regulations including those of the New Mexico Oil Conservation Commission, or the terms and conditions of the Rocky Mountain Low Level Radioactive Waste Compact.

1401. SCOPE.

A. The regulations of this Subpart and other applicable subparts of this Part apply to any person who engages in the extraction, transfer, transport, storage or disposal of NORM, or in the enhancement of NORM, in the oil and gas industry by altering the chemical properties, physical state or concentration of

(Continued on page 5)

NEW MEXICO (continued)
the NORM or its potential exposure pathways to humans.

B. The regulations of this Subpart and other applicable subparts of this Part also apply to sludges and scale deposits in tubulars and equipment and to scale deposits from cleaning added to the environment. The regulations of this Subpart and other applicable subparts of this Part also apply to NORM deposits in soil, water and the environment unless otherwise regulated.

C. The regulations of this Subpart and other applicable subparts of this Part also address Regulated NORM management, transfer, storage, and disposal with regard to facilities involved in storage and/or cleaning of tubulars and equipment.

1403. EXCEPTIONS.

A. For release for unrestricted use, persons who receive, possess, use, process, transfer, distribute, transport, store or dispose of NORM are exempt from the requirements of these regulations if: the NORM present is at concentrations of 30 picocuries per gram or less of radium 226, above background, or 150 picocuries per gram or less of any other NORM radionuclide, above background, in soil, in 15 cm layers, averaged over 100 square meters. Samples should be taken if gamma radiation readings (microR/hr) are equal to or exceed twice background readings when surveyed at a distance of 1 cm from the surface of the soil, in accordance with department guidelines.

B. The possession and use of natural gas and natural gas products and crude oil and crude oil products as fuels are exempt from the requirements of this Subpart.

C. NORM not otherwise exempted and equipment from oil, gas, and water production containing NORM are exempt from the requirements of this Subpart if the maximum radiation exposure reading at any accessible point does not exceed 50 microroentgens per hour (microR/hr) (0.5microSv/hr), including background radiation levels. Sludges and scales contained in oil, gas and water production equipment are exempt from the requirements of this Subpart if the maximum radiation exposure reading within 1 cm of the surface of the sludge or scale does not exceed 50 microroentgens per hour (50microR/hr) (0.5 microSv/hr), including background radiation levels. If the radiation readings exceed 50 microR/hr (0.5microSv/hr), removable sludges and scales are exempt from the requirements of these regulations if the concentration of Radium 226, in a representative sample, does not exceed 30 picocuries per gram.

D. NORM not otherwise exempted and equipment from gas processing, fractionation, and dry gas distribution containing NORM are exempt from the requirements of this Subpart if the removable surface NORM contamination does not exceed 1000 dpm/per 100 sq cm and otherwise conforms with the requirements of (S)1403.A. Removable scale from gas processing fractionating, and dry gas distribution is exempt from the requirements of this Subpart if the concentration of Lead 210, in a representative sample, does not exceed 150 picocuries per gram.

E. Produced water is exempt from the requirements of these regulations if it is reinjected into a Class I or Class II Underground Injection Control(UIC) well permitted by the Division and/or

stored or disposed in a double, synthetically lined surface impoundment permitted by the Division.

1405. PROTECTION OF WORKERS DURING OPERATIONS.

A. All general and specific licensees shall conduct operation

1. in compliance with the standards for radiation protection set forth in Subparts 4 and 10, except for releases of radioactivity in effluents, which shall be regulated under (S)1406, and disposal, which shall be regulated under (s)1407, and;
2. pursuant to a Worker Protection Plan prepared according to applicable Department guideline and maintained by the licensee made available upon request of employees or representatives of the Department. The licensee shall post official notices to employees in areas where employees will have sufficient access to notification of the Plan.

B. The Department will prepare and issue worker protection guidelines and notices to employees no later than six (6) months from the effective date of these regulations. The Worker Protection Plan prepared by the licensee pursuant to (S)1405 A 2 shall be no less stringent than the Department's worker protection guidelines.

C. Licensees shall incorporate hazard identification and training into their hazard communication programs as required by the Occupational Safety and Health Administration(OSHA) or by the Board pursuant to the Occupational Health and Safety Act, and as required under Subpart 10 for personnel working on or around equipment and materials that contain Regulated NORM. Regulated NORM material that h

(Continued on page 6)

NEW MEXICO (Continued)
been removed from equipment and containerized shall be labeled as per the requirement of (S)430 and (S)431.

D. Licensees operating at more than one location may prepare a single Worker Protection Plan to cover all facilities and operations in New Mexico, provided that the Plan is readily accessible to all employees.

E. The total radiation dose in any one year to any General Licensee employee from Regulated NORM shall not exceed the standards for exposure to members of the public as set forth in Subpart 4.

Employees engaged in an activity subject to a Specific License as required by (S)1411, shall not exceed the limits for radiation workers as specified in Subpart 4. Any worker engaged in an activity subject to a Specific License and who is likely to receive in one year an accumulative dose in excess of 500 mrem (5mSv) shall be monitored.

1406. PROTECTION OF THE GENERAL POPULATION FROM RELEASES OF RADIOACTIVITY.

A. All licensees shall conduct operations in compliance with the standards for radiations protection set forth in Subpart 4. and in such a manner that concentrations of radioactive materials which are released to the general environment do not result in an annual dose exceeding 100 mrem (1 mSv) in a year. The dose in any unrestricted area from external sources shall not exceed 2 mrem (20microSv) in any one hour. If the license permits members of the public to have access to restricted areas the limits for members of the public continue to apply to those individuals.

B. All licensees shall assure that any equipment released for

unrestricted use shall not exceed the exposure limits specified in (S)1403.

C. The licensee shall provide the recipient of transferred equipment, the inside of which is not accessible through any opening, plate, lid, or hatch, with a notice that required surveys have been performed, that equipment meets the standards of (S)1403 C or D, and that further surveys may be necessary if the equipment is structurally modified following transfer. The licensee shall retain copies of all notices of transfer.

1407. DISPOSAL AND TRANSFER OF REGULATED NORM FOR DISPOSAL.

A. Disposal of Regulated NORM on or near the surface of the ground shall be done pursuant to a general license issued under (S)1410 and Subpart 13 and pursuant to NMOCD Rule 711. A general licensee may blend or disc Regulated NORM contaminated soils in place provided that:

1. the soils were contaminated at that site and prior to promulgation of this Subpart; and
2. the limits established in (S)1403 A are met.

B. Disposal of Regulated NORM in nonretrieved flowlines and pipelines, in plugged and abandoned wells or by deep-well injection shall be done pursuant to a general license issued under (S)1410 and pursuant to applicable Division rules and regulations.

C. All licensees shall store, transfer and-or dispose of Regulated NORM in accordance with the Worker Protection Plan required under (S) 1405. All requirements of this Worker Protection Plan shall be available for inspection by the Department.

D. Regulated NORM shall only be disposed by the methods

enumerated below, except that the Department will consider and approve alternative methods of disposal if the applicant demonstrates that such alternative method(s) will protect the environment, public health and fresh waters, and otherwise is consistent with this Subpart, with other provisions of this Part and with applicable Division rules and regulations.

1. Disposal in Nonretrieved Flowlines and Pipelines. Nonretrieved flowlines and pipelines which are buried are authorized by the Department to be left in place in accordance with Division rules and regulations.

2. Disposal at Commercial and Centralized Facilities. Before a commercial or centralized facility may accept Regulated NORM for treatment and-or disposal, the operator of the facility shall obtain both a specific license issued by the Department pursuant to the requirements of this Subpart and a permit from the Division, and must be in compliance with Subpart 13.

3. Disposal in Plugged and Abandoned Wells. The Department allows downhole disposal of NORM solids and NORM contaminated equipment in wells which are to be plugged and abandoned, provided such procedures are performed in a manner to protect the environment, public health, and fresh waters, are conducted in accordance with applicable Division rules and regulations; and occur below the lowermost underground source of drinking water. The allowable form shall be media-laden fluid with a minimum density of nine (9.0) pounds per gallon and with the allowable volume for disposal dependent on the plug location required for a specific well.

(Continued on page 7)

NEW MEXICO (continued)

4. Disposal by Injection. The Department allows the injection of Regulated NORM into Underground Injection Control (UIC) Class I nonhazardous and Class II wells pursuant to NMOCD rules and regulations. All UIC Class I nonhazardous and Class II injection wells shall be permitted by the Division.

5. Other Disposal Methods. Each person subject to general or specific license requirements shall manage and dispose of Regulated NORM:

a. in accordance with the applicable requirements of subparts 4 and 10;

b. in accordance with the applicable requirements of the U.S. Environmental Protection Agency for disposal of such wastes;

c. by transfer of the wastes for disposal to a land disposal facility licensed by the U.S. Nuclear Regulatory Commission, an Agreement State, or a Licensing State; or

d. in accordance with alternate methods authorized in this Subpart or by the Department in writing upon application or upon the Department's initiative and in accordance with division Regulations.

1409. REQUIREMENTS FOR STORAGE OF REGULATED NORM.

A. Storage of Regulated NORM, whether under a general or specific license, will be done in such a manner as to prevent, to the extent practicable, release of NORM to unrestricted areas, and otherwise to protect human health and the environment.

B. Storage of Regulated NORM will be done in such a manner as to comply with the limits set forth in

(S)413 and (S)425, including those specified in Appendix B, Table II of Subpart 4, of the New Mexico Radiation Protection Regulations.

C. Regulated NORM will be stored at all times:

1. In accordance with the recommended practices of Section 6 of the American Petroleum Institute's Bulletin E2 (edition of April 1, 1992, or most recent edition), including practices specified for facility security, management of uncontained NORM, containerization and labeling, signage and record keeping, except that the dose limits specified in Section 6 or Bulletin E2 shall not apply;

2. NORM storage facilities must be designed to minimize or prevent release of Regulated NORM to the environment, and

3. In accordance with applicable Department guidelines.

D. Licensing of Regulated NORM Storage Facilities:

1. Effective August 2, 1995, storage of Regulated NORM for longer than one year must be under a specific license unless the Department grants an extension of a general license issued pursuant to (S) 1410 A. Such an extension must be requested by the licensee on an annual basis and may be granted by the Department on an annual basis, not to exceed 10 years of storage under a general license; and

2. In granting an extension of a general license for storage of Regulated NORM, the Department must certify that the licensee is in compliance with Subparts A., B., and C., of (S) 1409 and has a valid reason or reasons why the Regulated NORM under his or her ownership will not be disposed within the next year. Factors the Department should consider in determining whether the licensee

has a valid reason or reasons for receiving an extension include, but are not limited to, the volume and radioactivity of the Regulated NORM, and-or the location of the storage facility and its proximity to populated areas or sensitive environments.

E. Storage of Regulated NORM under a specific license will be done in accordance with the requirements of this Subpart, any other applicable requirements of this Part and any other conditions as may be imposed by the Department to ensure compliance with these regulations.

Sections of Subpart 14 not summarized above include:

1402. DEFINITIONS.

1404. RADIATION SURVEY INSTRUMENTS

1408. RADIATION SURVEY REQUIREMENTS.

1410. GENERAL LICENSE.

1411. SPECIFIC LICENSE.

Complete copies of Subpart 14 can be obtained from:

Bill Floyd
Hazardous and Radioactive
Materials Bureau
Department of Environment
P.O. Box 26110
Santa Fe, NM 87502
(505) 827-1558

NEW YORK

Any licensed NORM in New York comes under their Part 380 regulations for disposal. New York also has a soil cleanup and decommissioning standard that was adopted in September, 1994. This standard was sent to the EPA for their consideration for use as a federal standard.

(Continued on page 8)

