

The *NORM* Report

Naturally Occurring Radioactive Material Contamination
SUMMER 1999

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Regulations for the Control of Naturally Occurring Radioactive Materials - An Update

The status of regulations for the control of NORM contamination is summarized below for all 50 states, the Environmental Protection Agency (EPA) and the Nuclear Regulatory Commission (NRC), Canada, and the Conference of Radiation Control Program Directors (CRCPD). NORM contamination is not limited to the petroleum industry and several non-petroleum states are drafting rules for the control of NORM in other industries in their states. Each regulatory agency was contacted during late September and early October, 1999.

The last state to enact NORM regulations was Ohio. Ohio's regulations became effective June 9, 1997, and were summarized in the Spring 97 issue of *The NORM Report*. The New Mexico and South Carolina regulations were summarized in the Summer 1995 issue of *The NORM Report*. Louisiana, Mississippi, Arkansas, Texas and Georgia have previously enacted regulations for the control of NORM. Oregon enacted regulations in January 1990. Although the Oregon regulations were specifically written for control of NORM in zircon sands, the Oregon regulations do apply to all NORM contamination in the state. The Oregon regulations were summarized in the Winter 1996 issue of *The NORM Report*.

There currently are no federal regulations specifically for the control of NORM, although the Environmental Protection Agency appears to be moving in that direction.

Enactment of regulations specifically for the control of NORM requires compliance by all industries and companies with NORM contamination and NORM waste materials. Companies should also be in compliance with state general regulations for the control of radiation and the OSHA radiation regulations.

The status of NORM regulations in all 50 states, the EPA and NRC, Canada and the CRCPD begins on page 2.

Its just a question of doing what is right and what is best —
scientifically, technically, and environmentally.

— Anonymous

The NORM Report
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Peter Gray & Associates

P.O. Box 11541

Fort Smith, AR 72917

Tel: 501/646-5142

Fax: 501/646-5359

email:

pgray@normreport.com

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Summaries of State and Federal Regulations for the Control of NORM

ALABAMA

Alabama is waiting for the CRCPD recommendations for the control of NORM before finalizing their redraft of the state's proposed NORM regulations. There is no time table for the regulations to be adopted. There has been some interest in plugging and abandoning wells, but there have been no requests from industry for NORM regulations.

ALASKA

There is no NORM regulatory activity in Alaska at the present time. Although the price of oil has risen significantly, the budget is still very tight.

The Arctic Monitoring Assessment Program which is a consortium of all the Arctic countries, is starting to take an interest in NORM-type material. It is not known how this will translate into the U.S. Committee's action on the issue.

Alaska is fielding many questions from its residents regarding the Japanese nuclear incident.

ARIZONA

Although some consideration has been given to the need for specific NORM regulations in Arizona, there is no regulatory activity at present. All radioactive materials, including NORM, are addressed in Arizona's general radiation regulations.

ARKANSAS

The Arkansas NORM regulations constitute Section 7 of the *Arkansas Rules and Regulations for Control of Sources of Ionizing Radiation*. The revised regulations were summarized in the Fall 96 issue of this newsletter. There are no plans at present to further revise the NORM regulations.

CALIFORNIA

In 1993, California underwent a peer review of its oil and gas exploration and production waste management regulatory programs. The review was conducted by the Interstate Oil and Gas Compact Commission (IOGCC), in cooperation with the U.S. Environmental Protection Agency and other interested groups. One recommendation of the review team was for a thorough evaluation of the industry NORM survey data by the appropriate state agencies to verify the extent of oil and gas field NORM in California.

Subsequent to the IOGCC peer review, and following increased public and governmental interest in NORM issues, the Department of Conservation, Division of Oil, Gas and Geothermal Resources and the Department of Health Services, Radiological Health Branch conducted a more comprehensive survey of selected sites. This effort was in cooperation with the oil and gas industry. The sites chosen for the study were selected because they were points where NORM was expected to occur; the sites were not selected randomly.

All six oil and gas districts in the state were sampled in this study. Four hundred seventy-five radiation measurements were taken in 70 oil and gas fields. In addition to gamma radiation meter readings, 124 samples of pipe scale, produced water, tank bottoms and soil were collected and analyzed by the Sanitation and Radiation Laboratory of the Department of Health Services to assess the actual concentrations and radionuclides present.

The results of the study indicate that NORM is not a serious prob-

lem in California oil and gas production facilities - confirming the findings found in an earlier survey (1987). In the 1987 survey, seventy-eight percent of the measurements were at background levels. A few sites had elevated levels of NORM. Further studies of those sites should be considered. Routine protective measures may be all that is necessary to minimize exposure to radiation in these particular areas. Survey results and laboratory analyses are reported in: *A Study of NORM Associated with Oil and Gas Production Operations in California*. The report was issued by:

Department of Health Services
Radiological Health Branch
and
Department of Conservation
Division of Oil, Gas and
Geothermal Resources

Elevated levels of NORM were found in material from some of the production facilities. The NORM was found in water filters and softeners, gas processing equipment, pipe scale, and tank bottoms. However, these elevated levels were not high enough to be of immediate health concern.

Copies of the report are available from:

Stephen Hsu
Department of Health Services
Radiological Health Branch
601 N 7th Street
P.O. Box 942732, MS 178
Sacramento, CA 94234-7320
E-mail: shsu@hwl.cahwnel.gov
Telephone: (916) 322-4797

A summary of the report recommendations was included in the Fall 96 issue of The NORM Report.

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CALIFORNIA (continued)

Promulgation of NORM regulations in California is low priority at present. However, it is expected that California will enact NORM regulations sometime in the future.

COLORADO

Senate Bill 97-154, **Controlling Regulation of Radioactive Material**, did not get out of the Appropriations Committee and the Legislature adjourned without further action. (See the Winter 97 issue of *The NORM Report* for a summary of Bill 97-154.)

There is no NORM regulatory activity in Colorado at this time.

CONNECTICUT

Using "**Guidelines for Disposal of Drinking Water Wastes Containing Radioactivity**" (U.S. Environmental Protection Agency draft, June 1994) and Nuclear Regulatory Commission limits for release of licensed material, the Connecticut Department of Environmental Protection put together its first guidelines for an actual water treatment facility. It will (for the present) continue developing guidelines for other facilities, giving case-by-case guidance. Simply put, the guidance will be to apply NRC discharge limits above background radioactivity. EPA Region I has given preliminary concurrence on this interpretation of EPA's Draft guidance. The thinking on this — If it came from the ground and nothing was done to enhance it, it can go back into the ground.

DELAWARE

There are no specific regulations for 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 1993. A revision of the general reg-

ulations became effective September 1, 1995. The revision tightened the compliance aspect of the regulations. NORM is considered to be covered in Sections C and D, Radioactive Materials, in the regulations.

The Radiation Control Regulations are being considered for further revision, particularly Parts H and K. The revisions are at least six months to a year away.

NORM contamination appears to be minimal in the state. Occasionally a call is received from a salvage yard or steel mill reporting that their gate radiation monitors had detected gamma radiation above background on a load of scrap metal.

FLORIDA

Recommendations of the Florida NORM Advisory Committee (FNAC) Regarding the Adoption of NORM Regulations in Florida was submitted October 14, 1997 to the Advisory Council on Radiation Protection. Since the recommendations of the Committee are indicative of many of the issues confronted by regulators when considering regulations for the control of NORM, a summary of the recommendations was reported in the Winter 98 newsletter and repeated in the Fall 98 issue.

In its continuing effort to characterize TENORM within the state, site visits to oil fields located in southern Florida are continuing. The inspections verified that TENORM concentrations at the sites are minimal. The highest recorded gamma reading was 80 $\mu\text{R/hr}$, taken at the base of a saltwater storage tank that had been accumulating particulates for at least ten years. No other readings exceeded one-half that total. Analytical sample results are expected to confirm the low radium

content of oilfield pipe scales in the South Florida fields. No conclusions have been reached and no report has been issued. The State's intent is to write a comprehensive report on TENORM in Florida.

The report on the program sponsored by the Florida Institute of Phosphate Research to characterize NORM in the phosphate industry is complete and is awaiting printing and should be available soon.

GEORGIA

Georgia's regulations for the control of NORM became effective in October 1994. There have been no changes in the rules since. Revisions to the general rules and regulations for the control of radiation have been drafted and were adopted by the Board. The revisions became effective May 6, 1997. However, there are no changes in the NORM rules in this revision.

HAWAII

Hawaii is revising their general regulations for the control of radiation. It is planned to incorporate the CRCPD Part N in the revised rules. It is expected that the new regulations will be ready in 2000.

Hawaii does not 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 state's military posts and bases, including old radium gauges and instruments. Additionally, there may be some NORM associated with the dry dock activities in the state.

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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 NORM regulations. There are provisions in the general regulations for the control of radiation that can be used for NORM problems if the need arises.

Idaho does have a problem with cleaning up old uranium tailing piles. Some of this material predates 1978 and the NRC says it does not have jurisdiction to regulate it. The Army Corps of Engineers has been assigned to clean it up and are considering disposing of the material in a RCRA facility.

ILLINOIS

Illinois has drafted regulations for the control of TENORM based on the November 97 draft of CRCPD Part N. The draft has been circulated in-house. It is planned to have stakeholder meetings during the winter to get their input before publishing it in the Illinois Register.

Some of the delay was caused by the rewrite of licensing requirements in the general radiation regulations. Since the NORM draft rules refers to these licensing regulations, the NORM rules had to be revised as well.

The TENORM regulations will be summarized in **The NORM Report** when available.

INDIANA

No new regulations for the control of NORM have been enacted or proposed at this time in Indiana. There have been incidents involving NORM — contaminated materials in scrap yards, etc. It is expected there may be a need for NORM regulations sometime in the future.

IOWA

Iowa does not have specific regulations for the control of NORM. The Iowa general regulations for radiation control are assumed to cover NORM and are used when NORM problems arise. Most of the NORM problems in Iowa involve NORM contaminated metal sent to scrap recyclers. Most of this contaminated metal comes from out-of-state sources.

KANSAS

Regulations for the separate and specific control of NORM have not been proposed. Regulations for the control of all radioactive materials in Kansas implicitly include NORM. NORM problems that do arise are handled on a case-by-case basis, taking into consideration radiation exposures to the public and workers.

Kansas regulators have been working closely with the scrap industry, but there is no indication of probable legislation concerning NORM issues.

KENTUCKY

The Kentucky Department of Environmental Protection continues to work on a satisfactory long term disposal site for NORM. In the meantime, remediation activities in the Martha Oilfield are proceeding gradually and continually towards the final phases of the cleanup of the field. Remediated materials are being stored in a temporary site pending the resolution of discussions on long term storage.

Tracts of land are being certified that they meet the remediation requirements worked out with Ashland Oil. In the last month several owners of some of the tracts have been identified and letters sent to them verifying that their land had been satisfactorily reme-

diated.

When the public clamor over the contamination of the Martha Oilfield dies down, consideration will be given to promulgating NORM regulations.

LOUISIANA

There have been no changes or revisions in the Louisiana NORM regulations and none are planned at the present time.

Chem Waste has received approval for the disposal of NORM wastes containing up to 150 pCi/gm. Chem Waste was hoping for a permit to dispose of mixed wastes, but the permit by the Department of Natural Resources was to create a NOW disposal facility within, but separate from, the RCRA facility. There is a cell specifically for NOW material.

US Liquid sites in Louisiana can receive wastes containing less than 30 pCi/gm.

There is nothing new on the pending application for a new NORM disposal well. The DEQ is waiting approval from the Office of Conservation who must approve as a disposal well.

The number of P&A disposal wells has increased probably due to the high costs of NORM waste disposal.

There is one facility operated by Phillips Services. It is allowed to operate as a commercial facility because during the incineration process used the NORM is diluted. It is required that the incinerator wastes be disposed as incinerator RCRA waste. As long as the NORM wastes contain less than 5 pCi/gm the Department is not concerned about it from a regulatory

(Continued on page 5)

LOUISIANA (continued)
point.

Chevron has a NORM injection well for their own wastes from a specific cleaning area (that is, a non-commercial facility.) Chevron was refused permission to bring NORM wastes from Chevron facilities in Mississippi for disposal in their Louisiana injection well.

Meetings have been held with the Hazardous Waste Division to discuss the disposal of NORM contaminated mixed wastes in a hazardous waste landfill. One problem is that the hazardous waste disposal regulations in Louisiana prohibit the disposal of RCRA hazardous wastes containing NORM in a hazardous waste landfill.

The Louisiana regulations are based upon federal regulations. There has been some contact with the EPA in an attempt to determine the intent of the federal regulations. Knowing the intent of the federal regulations may suggest some options which can be used for the disposal of the hazardous wastes containing small concentrations of NORM. The federal regulations do allow some radioactivity, e.g. cesium-137, in the wastes to be disposed of in a hazardous waste landfill. Up to 100 picocuries cesium per gram can be disposed of this way.

MAINE

Maine has general regulations for the control of radiation, but does not currently have specific regulations for NORM. The CRCPD Draft Part N (TENORM) is being reviewed for possible adoption early to mid 2000.

Maine does have NORM - contaminated water treatment wastes. Many water supplies in Maine contain significant concentrations of

radium, radon and uranium. Ion exchange resins used in water treatment can become "hot" with radium and uranium. Carbon filters used to remove radon from water become contaminated with the radon decay products, i.e. radioactive lead, bismuth and polonium.

The recent National Academy of Science report (**Risk Assessment of Exposure of Radon in Drinking Water, 1998**) and EPA's imminent adoption of radon in water MCL will mandate the state adopt water treatment wastes regulations.

MARYLAND

Maryland has no specific regulations for the control of NORM. NORM is handled under the general radiation regulations. These general regulations were recently revised to bring the rules into line with 10 CFR 20 as well as making other changes deemed advisable. The revisions became effective October 9, 1995.

MASSACHUSETTS

Massachusetts does not have specific regulations for the control of NORM. NORM is considered to be a subset of NARM and NARM is considered to be regulated by the Massachusetts general radiation regulations.

These general radiation regulations were amended earlier this year and became effective July 9, 1999.

MICHIGAN

There have been no changes in the Michigan guidance documents for the control of NORM and although none are planned for the immediate future, the CRCPD's Part N is being closely followed to determine if it should be the basis for future NORM regulations in Michigan.

The Michigan guidelines for disposal in a type 2 municipal solid waste landfill allow up to 50 pCi/gm radium-226 to be disposed. This can be a large cost saving. Analysis has shown that this level shows insignificant risk to the public.

Michigan is resurveying many sites for NORM contamination. The original surveys had been made in the early 90's. The resurveys show that, in general, oil and gas sites which showed NORM contamination in the earlier surveys showed even greater contamination in the present study. For example, radiation readings of 1,800 μ R/hour were seen at a gas separator and radioactivity levels of radium-226 as high as 150,000 to 200,000 pCi/g are seen in oil and gas facilities.

NORM contamination in paper mills has been reported. It is expected that Michigan paper mills will be surveyed for NORM

MINNESOTA

Minnesota has no regulations for the specific control of NORM; it has regulations for devices that use discrete NARM (e.g. radium-226) as a source of radiation.

Within the next year Minnesota will have permitted four landfills to take low-level NORM wastes. One of the landfills should be permitted by November 1, 1999 and the other three before the end of 2000. The level of NORM which will be accepted at the landfills is not determined yet.

The level of concern about NORM contamination is increasing as more people learn about NORM

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MINNESOTA (continued) contamination. One problem that has arisen is the zircon sands left when foundries go out of business. Allowing these NORM wastes to be disposed in a landfill will make the disposal easier.

In 1998, the Minnesota Department of Health began the process to become an Agreement State with the U.S. Nuclear Regulatory Commission.

MISSISSIPPI

Responsibility for NORM in Mississippi is currently divided between the Department of Health and the Oil and Gas Board. The Oil and Gas Board has authority for NORM at the wellsite (effective July 1, 1995). After the petroleum leaves the wellsite the Department of Health has jurisdiction for any NORM contamination.

However, the Mississippi legislature has enacted legislation that gives the Oil and Gas Board jurisdiction over all oil and gas wastes. The Oil and Gas Board's NORM rules which became effective July 1, 1995 assumes jurisdiction only over NORM at the well. The Mississippi State Board of Health Regulations for Control of Radiation, Section 801.N is still in effect. The Division of Radiological Health continues to process licenses from contractors for NORM decontamination at industrial facilities. The attorney for the Department of Health believes that any commercial remediation, etc. will still have to be licensed by the Department.

Although the jurisdictional conflict has not been completely resolved, it has been smoothed out to a degree. If the NORM wastes are generated by E & P activities it is assumed to be under the jurisdiction of the Oil and Gas Board. If

the dosage from the NORM reaches a certain level, the Department of Health assumes jurisdiction. The Department of Health does not appear to be disputing this. The Oil and Gas Board has assumed jurisdiction for about 99% of NORM associated with oil and gas.

On August 11, 1995, the Oil and Gas Board issued a proposed **Rule 69: Control of Oil Field NORM**. The rule provides the regulations for the control of oil field NORM to ensure that radiation exposures of workers and members of the general public are negligible. The rule applies to NORM that has been derived from the exploration and production activities of oil and gas operations within Mississippi.

Revisions made to Rule 69 at the public hearing August 1995 were summarized in the Winter 96 issue of **The NORM Report**.

Rule 69 is being implemented. Oil and gas operators are conducting NORM surveys on all their properties. Over 1,500 survey data have been entered in a computer. Once all the surveys submitted have been put in the data base, it will be determined which oil and gas sites have not submitted survey data.

The data will be analyzed to determine how many sites are over a selected concentration level of NORM contamination. In the absence of a resolution of the jurisdictional dispute between the Department of Health and the Oil and Gas Board, the latter is assuming responsibility for every oil and gas site in the state.

The Oil and Gas Board has proposed **Rule 68, Disposal of Naturally Occurring Radioactive Materials (NORM) Associated with the Exploration and Production of Oil and Gas**. Rule

68 was proposed by an oil and gas association. At a hearing held September 15, 1999 arguments and closing statements were heard. The Mississippi Department of Health raised some concerns (particularly about the landspreading option) as did the state DEQ and the EPA (by letter). It has not been announced when the Oil and Gas Board will make its decision. It is the Board and not the Legislature who will decide if the proposed Rule 68 becomes Rule 68. The decision is expected in the near future. When Rule 68 is adopted I will summarize it in **The NORM Report**.

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.

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 and NORM is not considered to be included in these general 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. The state believes NORM is included in their general rules for the control of radiation. There are no plans for specific NORM rules at the present time.

Like many other states, Nebraska receives comments and questions from recyclers. Some of these recy-

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NEBRASKA (continued)

clers have "requested" NORM rules so they can use NORM limits, e.g., 50 microrem/hr, to know when they can refuse or accept contaminated scrap.

NEVADA

Nevada has no specific NORM regulations and none have been proposed. Comprehensive statutes for the 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 presently not 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 actually become quite "hot". Another potential NORM problem area is the inadvertent exposure to the radiation hazards associated with construction involving granite containing uranium and thorium and their radioactive decay products.

Future regulatory activities may consider the need to adopt regulations similar to Part N of the Conference of Radiation Control Program Directors, Inc. (CRCPD), and the specific NORM regulations which have been adopted by several states.

NEW JERSEY

The Bureau of Environmental Radiation has completed updating the interested party draft of N.J.A.C. 7:28-12, *Soil Remediation Standards for Radioactive Materials*. Updates included incorporation of com-

ments received and changing some language to be consistent with the new Brownfield and Contaminated Site Remediation Act. At its January 20, 1999 meeting, the Commission on Radiation Protection approved the release of the rule as a proposal.

On July 6, 1999, N.J.A.C.7:28-12, *Soil Remediation Standards for Radioactive Materials*, was proposed in the New Jersey Register with a comment period of 30 days. The comment period was subsequently extended to September 15, 1999. The proposal, the technical basis document, the spreadsheet that implements the standards, and guidance on conducting characterization and final surveys, are all available on the Radiation Protection Program's web site: <http://www.state.nj.us/dep/rop/index>.

NEW MEXICO

The New Mexico NORM regulations, *Subpart 14: Naturally Occurring Radioactive Materials (NORM) in the Oil and Gas Industry* became effective August 3, 1995.

Rule 714, Disposal and Transfer of Regulated NORM for Disposal provides the regulatory framework for the disposal options addressed in the Part 14 NORM regulations. Rule 714 became effective July 15, 1996. Rule 714 was summarized in the Summer 96 issue of *The NORM Report*.

The New Mexico NORM regulations allow for down-hole injection of NORM waste in a company's own wells. However, the Rocky Mountain Board, one of the Low-Level Radioactive Waste regional compacts, considered NORM to be a low-level radioactive waste and subject to their regulations and the Compact refused to give approval for the injection of NORM wastes

in private wells in New Mexico.

On June 1, 1998, the Rocky Mountain Low-Level Radioactive Waste Board adopted an amendment to the Board's rules. The change clarifies that NORM waste from oil and gas production within the Rocky Mountain Compact region may be placed in oil and gas wells without the Board's designating such wells as regional facilities. The Board's action followed a public hearing on the matter.

No one has actually requested permission to dispose of NORM down-hole. A few companies in the state who have accumulated NORM wastes under a general license have requested a one year extension for storing the wastes. Most of these NORM wastes will probably eventually be disposed of down-hole.

The guideline document draft for use with the NORM regulations (Appendix A of the regulations) is now available. The guide is entitled *Appendix A: Regulation Guidelines for the Management of NORM in the Oil and Gas Industry in New Mexico*.

The purpose of the document is to provide guidance to persons involved with facilities or equipment associated with the production of oil and gas and how to conduct screening surveys with portable radiation detectors to identify NORM and to initiate determination of the extent of needed radiation protection controls. The guide is intended for individuals licensed by the New Mexico Environment Department and permitted by the New Mexico Oil Conservation Division. The document is intended to assist general and specific licensees in the proper use, transfer, transport, storage and disposal of

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NEW MEXICO (continued)
regulated NORM.

The guide describes the type and extent of information needed by the New Mexico Radiation Licensing and Registration Section staff to evaluate an application for a specific license for authorization to perform the following commercial services involving NORM contamination:

- A. Commercial decontamination of equipment, facilities and land.
- B. To perform maintenance on NORM contaminated equipment.
- C. To promote mixing, grinding, or volume reduction of NORM contaminated material in preparation for disposal.
- D. To package or encapsulate NORM contaminated materials in preparation for disposal.
- E. To provide health physics support for disposal in plugged abandoned wells.
- F. Other services as described in the application.

The following regulations apply and should be used in conjunction with the guide:

- A. Subpart 1. General Provisions
- B. Subpart 3. Licensing of Radioactive Materials
- C. Subpart 4. Standards for Protection Against Radiation
- D. Subpart 10. Notices, Instructions and Reports to Workers; Inspections
- E. Subpart 14. Naturally Occurring Radioactive Material (NORM) in the Oil and Gas Industry

The guide is for general guidance in preparation of the license application and should not be considered as all the information that may be required for a particular application. Nor is it a substitute for the applicant's safety evaluation of the proposed activity. The applicant must ensure that the application correctly and adequately describes the commercial services offered, and the radiation safety measures and procedures to be followed in order to provide adequate protection. For the purposes of this guide, decontamination means deliberate operations to reduce or remove residual NORM contamination from equipment, facilities or land.

On September 28, 1999 a meeting was held with a Texaco (Midland, Texas) employee (and other interested parties) who wanted to discuss some of the requirements of the Guidance Document. The Guidance Document has been out for about 18 months and before it was available the state asked for comments, etc. and received no response. Now Texaco has prepared a forty-page critique (for a 14 page document). Apparently one of Texaco's problems is the requirement to make baseline radiation surveys of contaminated equipment. Texaco does not think surveys should have to be made of equipment while it is being used. Bill Floyd's answer to that is that the surveys are necessary, for example, to verify that posting is, or is not, required for the protection of workers, etc. Depending on the results of the September 28 meeting, the guidance document may be revised.

Copies of the New Mexico NORM guide are available from:

William M. Floyd
Program Manager
Radiation Licensing &

Registration Program
2044 Galisteo
P.O. Box 28110
Santa Fe, NM 87502
Telephone: (505) 827-1862
FAX: (505) 827-1544

Copies of the State of New Mexico Radiation Protection Regulations (including the NORM rules), are available for \$37.50 from:

Santa Fe Printing
1424 Second Street
Santa Fe, New Mexico 87505
505-982-8111

NEW YORK

The New York State Department of Environmental Conservation, Bureau of Radiation and Hazardous Site Management, recently published a report entitled *An Investigation of Naturally Occurring Radioactive Materials (NORM) in Oil and Gas Wells 'in New York State.* (April 1999). The report documents the findings that oil and gas production is not adversely affected by NORM contamination and does not appear to be a public health or environmental problem in New York State. Copies of the report are available from:

Rudyard Edick or John Zeh
New York State Department of
Environmental Conservation
Division of Solid and Hazardous
Materials
Bureau of Radiation and
Hazardous Site Management,
Room 460
50 Wolf Road
Albany, New York 12233-7255
Phone: (518) 457-2225
FAX: (518) 457-9240

The report is also available on the website:

www.dec.state.ny.us/website/dshmhazrad/norm.htm

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NEW YORK (continued)

The introduction and conclusions of the Executive Summary for the report is reproduced below.

1. EXECUTIVE SUMMARY**Introduction**

This report presents the findings of the New York State Department of Environmental Conservation (NY SDEC) that New York State oil and gas production equipment and wastes are not significantly contaminated by naturally occurring radioactive materials (NORM). The concentrations of NORM found on oil and gas production equipment and wastes pose no threat to the public health and the environment. The research and analysis supporting this conclusion were performed in 1996. Direct measurements of the radioactivity at well sites were performed. Samples of scales, sludges, sediments, soils, water, rock, brines, waxes, and oils were taken and analyzed by gamma spectrometry.

Conclusions

While NORM-contaminated equipment has been a concern in North Sea oil well drilling, the results of this investigation show that NORM contamination of New York State equipment is insignificant. New York State well drilling equipment and wastes do not constitute a health risk for the State's residents nor present a potential degradation of the State's environment.

NORTH CAROLINA

Nothing presently is being proposed on NORM regulations for North Carolina. The state recognizes that NORM is an issue that may need further attention, particularly in scrap metal yards. The state is also aware that there are North Carolina industries that generate NORM wastes, such as the phos-

phate industry, waste water treatment sludge, and metal mining and processing wastes. For the present, North Carolina remains committed to interacting with industry, Federal and state agencies and providing assistance in resolving disposition of NORM wastes.

NORTH DAKOTA

North Dakota does not have specific regulations for the control of NORM. The state is currently revising their Radiation Control Regulations. No changes are expected with respect to NORM.

OHIO

The revised Ohio regulations for the control of radiation, including NORM and NARM, were summarized in the Spring 97 issue of *The NORM Report*. The regulations were revised to agree with the federal regulations as an initial step in Ohio's application to become an Agreement State. The Agreement State status became effective August 31, 1999.

The Ohio Department of Health and Radiation Control has proposed action to the following:

- * 3701:1-38, General Radiation Protection Standards; and
- * 3701-77 Low-level Radioactive Waste.

OKLAHOMA

Oklahoma has no specific regulations for the control of NORM contamination. The draft of NORM regulations being prepared by the Department of Environmental Quality's Radiation Management Advisory Council was tabled indefinitely at the request of the state legislature.

OREGON

There are no new developments regarding NORM regulations in

Oregon. Ray Paris, Manager of Radiation Protection Services in the Oregon Department of Human Resources was also the Chairman of CRCPD's NORM Commission that was responsible for writing the final draft of Part N. Oregon is "waiting" for Part N to be completed before revising or writing new NORM rules for the state.

Oregon has NORM regulations entitled *Regulation and Licensing of Naturally Occurring Radioactive Materials (NORM)*. The rules which became effective in January 1990 are found in the Oregon Administration Rules, Chapter 333, Division 117 - Health Division. The Oregon NORM rules were summarized in the Winter 96 issue of *The NORM Report*.

PENNSYLVANIA

All radioactive materials including NORM are addressed in Pennsylvania's general radiation regulations. At present there are no specific NORM regulations.

In the past few years some of the Pennsylvania brine wells were checked for NORM contamination as were roads where brine was used. Nothing of consequence was found.

Pennsylvania is in the process of becoming an Agreement State.

RHODE ISLAND

Rhode Island has no specific regulations for the control of NORM and none are in the planning stage. NORM is considered to be covered under the state's general radiation control regulations.

SOUTH CAROLINA

Part IX -- Licensing of Naturally Occurring Radioactive Material (NORM) became effective June

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SOUTH CAROLINA (continued) 30, 1995 in South Carolina. There have been no changes in the regulations and none are proposed at the present time. Part IX was summarized in the Summer 95 issue of *The NORM Report*.

SOUTH DAKOTA

South Dakota has regulations for the control of radiation, but nothing specific to NORM. No legislation has been proposed to regulate NORM at this time.

TENNESSEE

NORM contamination in Tennessee is handled basically like any other radioactive material. If it is enhanced above background levels, an assessment is made to determine if it constitutes a problem. If it does, it is dealt with similarly to any other radioactive material, i.e., by using the general radiation regulations. There are no specific regulations for the control of NORM and none are planned. It appears that as more people learn about NORM, more instances of NORM contamination are being reported.

Recently, some NORM contamination has been reported in area paper plants. The radium contamination is thought to come from the large amounts of water used. Another possibility for the contamination is from the clays used in the process. The response by the plants to the investigations has been very good and cooperative.

TEXAS

The Texas Department of Health has jurisdiction for NORM except for the disposal of NORM contaminated wastes. The Railroad Commission has jurisdiction for the disposal of oil and gas industry NORM wastes, while the Texas Natural Resource Conservation Commission has responsibility for the disposal of NORM wastes not

associated with oil and gas exploration and production.

In April, 1999, the Texas Department of Health (TDH) finalized revisions to 25 Texas Administrative Code, §289.259, **Licensing of Naturally Occurring Radioactive Material (NORM)**. The revisions include new definitions that support the changes in the rule. Exemptions for oil and gas NORM waste are redefined and exemptions for pipe (tubulars) and other downhole or surface equipment contaminated with NORM are clarified. Specific licensing requirements for spinning pipe gauge operations that perform NORM decontamination and for persons receiving NORM waste from other persons for processing or storage are added. Other minor grammatical changes are made to the section for clarification.

Over the last several years, industry has indicated that they consider "routine maintenance" to be the repair and maintenance of equipment for the purpose of restoring it to its intended use or efficiency, regardless of the presence of oil and gas NORM. Decontamination of equipment contaminated with NORM above the exempt limits may occur incidental to the routine maintenance. The TDH acknowledges that not all routine maintenance activities result in a significant increase in radiation exposure risk. Simple routine maintenance tasks such as replacing or repairing a valve, changing filters, or "pigging" a pipe are such activities.

The wording in the revised rule, "Maintenance that provides a different pathway for exposure than is found in daily operations and that increases the potential for additional exposure is not considered routine," was proposed in order to further define the risk the department

is concerned about. In discussions with the industry, the TDH determined that the activity that presents the most concern is vessel entry. The industry considers this to be routine maintenance. However, this is the type of operation that the TDH believes presents a significantly increased risk from an enclosed environment where an inhalation risk (a different pathway for exposure than is found in daily operations) from NORM can be present.

The TDH acknowledges that unlike the employees of a company specifically licensed to perform decontamination, the employees or contractors of a general license would be performing vessel entry on an infrequent basis and thus, the radiation exposure risk is lowered due to a time factor.

The TDH drafted language that will outline radiation safety precautions that must be followed when vessel entry is conducted during the course of routine maintenance, but wishes to seek further input from the industry on that draft language. However, in order for several of the other revisions of this section supported by commenters to become effective and for the section to be reformatted in Texas Register format, no change to the wording about routine maintenance was made prior to the rule revisions being finalized.

In July, 1999, the TDH held a workshop to explain the revisions to the rule and to get stakeholder input on the draft language about routine maintenance. Over 75 people attended the workshop and the TDH received a good amount of input on the draft language. Staff will be reviewing the input received during the workshop and will develop new draft revisions to

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TEXAS (continued)

25 TAC §289.259 in the near future.

The Texas Railroad Commission's Statewide **Rule 94: Disposal of Oil and Gas NORM Wastes** took effect February 11, 1995. This rule sets forth requirements for the safe disposal of NORM that constitutes, is contained in, or has contaminated oil and gas wastes. Rule 94 was summarized in the Winter 95 issue of *The NORM Report*. There are no plans to revise Rule 94.

The Texas Natural Resource Conservation Commission has deferred the development of rules for non-oil and gas NORM waste disposal, pending the results of a second needs survey. An initial survey, conducted in the summer of 1999, failed to gather sufficient data. Staff will continue to gather data regarding the generation of non-oil and gas NORM waste and need for disposal options in Texas. Disposal of non-oil and gas NORM waste in Texas that does not meet exemption criteria is currently prohibited by state rules.

UTAH

NORM is considered to be included in Utah's comprehensive radiation control regulations. No specific NORM regulations have been proposed at the present time in Utah.

There is a proposal for a new NORM and low-level waste disposal facility. Safety-Kleen currently has a hazardous waste facility ten miles north of Envirocare's NORM site and wants to convert one of their industrial waste cells to a low-level NORM cell. Safety-Kleen must submit a siting criteria document, get local approval, go through the licensing process and get the governor's and legislative approvals.

A preliminary decision was made that Safety-Kleen meets the siting criteria which is step one in their application process. Safety-Kleen underwent a "needs analysis" with the county. The County Planning Commission denied Safety-Kleen's request to amend the current conditional use permit. The decision is currently on appeal to the Tooele County Commission.

Envirocare's radioactive material license was renewed on October 22, 1998 for a five-year period.

VERMONT

Vermont has no regulations for the specific control of NORM and none are planned at the present time. Concern has been expressed as to the radiation received by some workers in granite plants due to radioactive materials (NORM) in dust and the air. An excess of lung cancers has been reported in employees who have worked for a long time in the stone industry. Silicosis used to be the primary result of working with stone, but now lung cancer is reported to be a serious hazard as well. Some persons have expressed a desire to investigate this in more detail, but limited time and testing capability permit only so much activity. The bottom line is that the regulators are being watched to see what they decide appropriate concentrations of NORM (radium) should be.

Another interesting situation involves the monitoring wells from waste treatment facilities. Some facilities are not prepared to take into account the natural radioactivity in the water. Some facilities are inappropriately applying the U.S. EPA standards for drinking water, neglecting the natural radioactivity in the water. Without allowing for the natural activity in the water, some of the monitoring wells exceed the EPA standard, leading to the conclusion that the treatment

facility is contaminating the ground water.

Another situation in Vermont involves medical radioactive waste shipped from Canada to Vermont for treatment. The regulations in Canada and Vermont are different creating a snag which the state is presently trying to resolve.

Vermont is becoming concerned as to what effect small concentrations of radium-224 (see page 28 in this issue), lead-210 and polonium-210 (all of which have been detected in Vermont waters) will have on regulations to safeguard the health of residents of the state.

VIRGINIA

Virginia has no specific regulations for the control of NORM. NORM is considered to be covered in the general regulations for the control of radiation. These general regulations are in the process of being revised.

WASHINGTON

The Departments of Health and Ecology have reviewed the environmental checklists and supporting information for three upcoming actions related to US Ecology's commercial low-level radioactive waste disposal facility located near Richland, Washington.

The three actions are: renewal of the facility operating license, approval of a closure plan, and a rule making establishing an annual disposal limit for naturally occurring and accelerator produced radioactive materials (NARM). In making the determination of significance, the two agencies have found that among the proposed actions, there are several probable direct or indirect impacts to elements of the environment such as air quality, soils, groundwater, and

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