The *NORM* Report

Naturally Occurring Radioactive Material Contamination in the Petroleum Industry
Fall 1992

Index

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Please call if you have questions, comments, or if we can be of service. Please fax any material suitable for inclusion in *The NORM Report.* ■

The NORM Report is published quarterly by Peter Gray and Associates, P.O. Box 470932, Tulsa, OK 74147. Call 918-250-6042 for information.

Regulations for the Control of NORM - Update

The status of regulations for the control of NORM is summarized below for 27 important petroleum producing states as well as the Nuclear Regulatory Commission, the Environmental Protection Agency, the Minerals Management Service, the western provinces of Canada, and the Atomic Energy Control Board of Canada. An update is also included from the Conference of Radiation Control Program Directors, Inc. (CRCPD). Each regulatory agency was contacted in late November and early December, 1992.

Louisiana, Mississippi, and Arkansas have enacted regulations for the control of NORM. Many states are in the process of drafting NORM regulations and several other states believe NORM is covered by their general regulations for the control of radiation.

Although most states and Canada do not have specific regulations for the control of NORM, NORM contamination is nominally regulated by the separate state regulations for the **Control of Radiation** that require licensing for the possession, use, transfer, etc. of radioactive materials, including NORM. However, these general regulations are largely ignored for NORM in the petroleum industry. (In many of the regulations it is not clear how licenses can be obtained for NORM contaminations.) Enactment of regulations specifically for the control of NORM will require compliance by companies operating within the state, not only with the NORM regulations, but also with the regulations for the control of radiation.

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

ALABAMA

Alabama has a draft of NORM regulations prepared which are similar to the proposed Texas regulations. However, the draft is essentially inactive at the present time. It is planned to get back to them in early 1993. Attention has temporarily been given to a survey to determine the status of radioactive sources within the state that may have been in use for 25 to 30 years or more.

ALASKA

There are no regulations for the control of NORM at present in Alaska. The regulations being proposed in other states are being studied as models for Alaska. Charles Tedford, the directior of Alaska's radiological health program, has stated that Alaska will hopefully have regulations in the "near future".

ARKANSAS

Arkansas enacted regulations for the control of NORM on June 26, 1992. The Arkansas regulations basically follow the Conference of Radiation Control Program Directors (CRCPD) guidelines. It was necessary to have NORM

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ARKANSAS (continued)
regulations in place as part of the process to become a licensing state. The regulations essentially refer to discrete sources rather than contaminated pipe scale, etc. Arkansas will address NORM-contaminated scale, etc. in a later revision. The revised regulations will be more specific and better applicable to NORM contamination in the peteroleum industry. More details on the Arkansas regulations are on page 6.

CALIFORNIA
California has not yet proposed regulations for the control of NORM. They plan to use the CRCPD Part N guidelines as a model. It is estimated that it will be 18 months to two years before the regulations are effective. The California LLW site will not be ready to open by January 1, 1993. They will petition to continue to ship radioactive wastes to Barnwell or Envirocare.

COLORADO
Colorado is still waiting for the CRCPD Part N guidelines to be finalized before acting. There is no timetable for NORM regulations in Colorado.

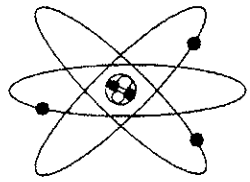
FLORIDA
Florida is not doing anything at present for specific regulations for the control of NORM. The state is primarily concerned with the phosphate industry, rather than petroleum. They are waiting to see what the Environmental Protection Agency will do on the regulation of NORM. There is concern as to what exempt level of radium-226 the EPA will use, i.e. 5 picocuries (pCi) per gram or values nearer to 30 pCi per gram as proposed in some other states. Florida is "afraid" of the 5 pCi level --- Florida as well as other states have land where the natural concentration of radium-226 is higher than 5 pCi per gram.

ILLINOIS
Illinois has not done anything specifically for the control of NORM since the last summary in the Winter 1992 issue of ***The NORM Report***. Draft 7 of the CRCPD guidelines are being put into the proper format for Illinois. Other state agencies which may be affected by the regulations are being contacted for their input. The Louisiana and Texas regulations are being reviewed also, e.g., the regulations for the disposal of radium in soil, etc. There is no timetable for final enactment of the NORM regulations.

INDIANA
Indiana does not have regulations for the control of NORM. The status quo is being maintained. Some changes are being made in other general radiation regulations, but primarily in the area of mammography. There is no timetable for the state to address NORM.

KANSAS
There is much discussion on NORM issues, but nothing specific to NORM regulations at present. The progress of other states on NORM is being followed. Kansas is concerned as to what level of radium exemption the majority of the states are proposing, i.e., 5 or 30 pCi per gram. NORM is becoming a more frequent issue as evidenced by the number of telephone calls and contacts the Kansas Department of Health and Environment receives.

KENTUCKY
NORM regulations in Kentucky are going through the administrative process for approval. The proposed regulations were approved by the Council of Health Services on October 22, 1992. They were then submitted to the Office of Policy and Budget on November 20 for review. If approved by the Secretary of the Office of Policy and Budget, the proposed regulations go to the Legislative Research Commission on



December 15, 1992. The proposed regulations will then be published in the Administrative Register on January 1, 1993 and a public meeting, if requested, will be on January 21, 1993. If there is no public meeting, the regulations go to the Administrative Regulations Review subcommittee in February. If approved by the subcommittee the proposed regulations go to the Health and Welfare Committee. If approved by this committee, the regulations become effective 30 days later. Therefore, the Kentucky regulations for the control of NORM could become effective in March, 1993.
The proposed Kentucky regulations set the radium exempt level at 5 pCi per gram. Kentucky believes the 5 pCi level is consistent with preliminary risk assessment calculations on the gamma radiation dose rates. Radon emanation rates from radium is very controversial and needs much better field data including better measurement techniques.

LOUISIANA
The revised Louisiana regulations for the control of NORM became effective in June, 1992. No further revisions to the regulations are now in progress. Louisiana's Department of Environmental Quality is interested in the way pit closures are being done. Of particular interest are those sites subject to NORM general licensure. Closures must be handled in the same way as any

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Louisiana (continued)
other licensable material. If a site is subject to general licensure, the radium concentration must be below 5 pCi/gram before being released from licensure. Containerized wastes must contain less than 5 pCi radium per gram before it can be released from a licensed facility. 30 pCi per gram is still the criterion for exemption in a non-licensed area. Louisiana has basically thrown out the radon emanation criterion for the radium exempt concentrations. The DEQ has received over 30 NORM waste management plans and has applications for about 10 specific licenses.

MICHIGAN

On November 20, 1992 the Division of Radiological Health of the Michigan Department of Public Health received a recommendation from the Radiation Advisory Committee for the Department to consider the preparation of some NORM standards and guidance documents. These documents would be in the form of technical advice as opposed to regulatory law. Five standards are being drafted:

1. Radium exempt concentrations
2. Acceptable equipment contamination
3. Acceptable soil or land contamination
4. Disposal alternatives
5. Public dose limits

Two NORM guides are in preparation:

N1 Screening survey
N2 Detailed testing procedures to allow release for unrestricted use

Several of these standards and guides are in draft form, but no final actions have been taken yet. The standards and guides may be preliminary to later NORM regulations. The standards are recommending 5 pCi per gram for radium. This eliminates the need to measure and control radon emanation rates.

MISSISSIPPI

Mississippi's NORM regulations were approved by the Mississippi State Board of Health on October 14, 1992. The regulations became effective November 15. 1992. Some details of Mississippi's Section N "Licensing of Naturally Occurring Radioactive Materials (NORM)" are discussed on page 6 of this newsletter. The regulations for radium exempt concentrations include the use of radon emanation rates, i.e.,concentrations less than 30 pCi per gram are exempt if the radon emanation rate is less than 20 pCi per square meter per second averaged over any 100 square meters. If the radon emanation rates are higher than 20 pCi, the radium exempt level is 5 pCi per gram.

MONTANA

There have been no new developments in Montana.The summary reported previously is still correct. That is, the regulations for the control of radiation have not been revised since 1980. There are no specific regulations for NORM and NORM is not considered to be covered in the radiation regulations. The Montana Department of Health and Environmental Sciences does have the statuatory authority for NORM regulations but there is no funded program for their development at present.

NEBRASKA

The present status of NORM regulations in Nebraska is the same as previously reported. Nebraska believes that NORM is included in the current regulations for the control of radiation. There are no plans for specific NORM regulations.

NEVADA

NORM is handled under Nevada's regulations for the control of radiation. They are following the development of the CRCPD guidelines and reviewing the Louisiana and Texas regulations. Regulations for the control of NORM will be proposed in the future if it is determined thay are necessary.

NEW MEXICO

The final NORM committee meeting was on December 3, 1992. The committee has put out an issues paper with the recommendation that NORM regulations be in place by April 30, 1993. The regulations will include disposal options. No decision has yet been made on the radium exempt concentrations, i.e. 5 versus 30 pCi per gram. Personnel assigned to a task force to prepare the regulations were announced at the December 3 meeting. The task force includes people from the Radiation Licensing and Registration Section as well as people from the Oil Conservation Division of Energy and Minerals. Others may also be included in the task force.

NORTH DAKOTA

If companies have NORM wastes in North Dakota, they are automatically licensees and have to comply with the waste disposal requirements in the general control of radiation regulations. For example, approvals are required for the disposal of NORM type wastes. The radiation regulations became effective June 1, 1992. Although there are limited regulations in the North Dakota regulations pertaining to NORM (primarily only with disposal aspects), they are thinking of adopting NORM regulations similar to the CRCPD guidelines. The Radiation Control Program of the North Dakota State Department of Health has jurisdiction over NORM. One area they are looking at is the disposal of NORM in downhole wells. None have been approved as yet. Exxon applied for a well disposal of NORM recently and received the necessary permits

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NORTH DAKOTA (continued)
from the state, but the Bureau of Land Management who had surface and mineral rights wouldn't approve the disposal. BLM had problems with meeting all federal regulations for such disposals. Currently, the disposal of NORM in a plugged and abandoned well in North Dakota doesn't look good.

OHIO
Ohio is essentially at the same place it was a year ago as regards NORM regulations. There have been two workshops with the CRCPD during 1992. Ohio is going to include coal and coal ash in their regulations when personnel are available. A blue ribbon commission is advising the Ohio State Legislature on low level radioactive waste facilities.

OKLAHOMA
Oklahoma's Radiation Advisory Committee met October 29, 1992 in Tulsa for a discussion of a draft of the proposed NORM regulations. The draft of *Subchapter 19. Licensing of Naturally Occurring Radioactive Materials (NORM)* contains the statement that "Persons who receive, possess, use, process, transfer, transport, store, commercially distribute, and/or dispose of NORM are exempt from the requirements of these rules if the materials contain, or are contaminated at, concentrations of 30 picocuries per gram or less of technologically enhanced radium-226 or radium-228, averaged over any 100 square meters -----" All references to radon emanations have been deleted. Unless changed in later drafts, the Oklahoma proposed regulations will be easier for the industry to live with in comparison with some of the other state regulations. There is no time table for the final adoption of the NORM regulations.

PENNSYLVANIA
No change from the last report. There are no specific regulations for the control of NORM.The CRCPD guidelines and the Louisiana and Texas regulations are being used for guidance when necessary. When the CRCPD has finalized its guidelines, Pennsylvania will enact appropriate legislation for the control of NORM.

SOUTH DAKOTA
South Dakota has regulations for the control of radiation, but nothing specific to NORM. There are no current plans for the development of NORM regulations.

TENNESSEE
NORM is handled basically as any other radioactive material. If it is enhanced above background levels, they try to make an assessment as to whether it constitutes a problem or not. If it does, it is dealt with as they would with any other radioactive material, i.e., by their general regulations for the control of radiation. There are no specific regulations for the control of NORM and none are planned at present.

TEXAS
Texas has separated the NORM disposal regulations from other regulations for the control of NORM.. The Bureau of Radiation Control in the Department of Health has jurisdiction for all NORM controls except for the disposal of NORM wastes. The disposal jurisdiction has been assigned to the Texas Water Commission. As a result of this separation the Texas Radiation Advisory Board has asked the Bureau of Radiation Control to rewrite Part 46 to delete any reference to NORM disposals. There will be other minor changes in the new draft as a result of public comments on the last draft. For example, property transfer problems will be clarified, "distribution" vs. "transfer" will be clarified, and the exemption criteria for soils and other media will be clarified. If the Radiation Advisory Board approves of the new draft (without disposal provisions) the draft will go to the Board of Health in January, 1993. After their approval, the draft will go out for public comment before final adoption, possibly in April, 1993. Texas still has the 5/30 pCi radium exempt concentration depending on radon emanation rates in their proposed regulations.

The Texas Water Commission is working on a draft of regulations for NORM disposal. The draft is on schedule to have it ready for the Radiation Advisory Board by March 1, 1993.

The Texas Railroad Commission is also involved with NORM because one option for disposal is injecting the NORM wastes into abandoned or class II injection wells.

Further changes in the draft or in future revisions of the regulations may occur because of studies being currently made on radon emanation rates from radium and changes resulting from current EPA programs and risk analyses on NORM.

UTAH
NORM regulations are considered to be included in Utah's comprehensive radiation control regulations. A state license is required for anyone with material containing more than 15 pCi radium per gram of material.

WEST VIRGINIA
There are no specific regulations for the control of NORM in West Virginia. NORM is thought to be adequately covered by other regulations that require registration

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WEST VIRGINIA (continued)
of facilities that own, possess, transfer, etc. NORM. There are no plans at present for the specific regulation of NORM.

WYOMING
Wyoming has no regulations for the control of NORM and none have been proposed at this time. Produced water must be analyzed for radium once a year.

U. S. ENVIRONMENTAL PROTECTION AGENCY
Very little progress on NORM regulations have been made since the last report six months ago. The draft report "*Diffuse NORM Wastes - Characterization and Preliminary Risk Assessment*" has not been finalized and there is no timetable for its finalization. The EPA is hoping to release a report on disposal options in Louisiana in the "near" future. Because of budgetary restraints, the national conference on NORM has fallen through the cracks. The EPA has the authority to regulate NORM if it chooses to do so.

MINERAL MANAGEMENT SERVICE
The MMS is not doing anything at present on new NORM regulations. There are no new policies and nothing planned for the near future. MMS does regulate produced solids, i.e. sand, sludge, and scale. Cleaned sand that has less than 25 microrems per hour from a one liter sample can be discharged. MMS does not regulate produced water (as far as radium content is concerned). The EPA is expected to be coming out with guidelines for produced water discharge.

Shell has recently finished an off-shore Louisiana injection application that had been approved in 1991.

"The impossible is often untried" -- Jim Goodwin

NUCLEAR REGULATORY COMMISSION
The NRC is having a contractor look at issues on discrete NORM to give background information to indicate direction to the NRC as to what the NRC should do about NORM. The report is nearly complete and should be published in January, 1993. At the same time, a response to a request from the Commission was being prepared on the same issues. On September 22, 1992 a report was sent to the Commission on "*Characterization of Discrete NORM and Evaluation of the Need to Seek Legislation to Extend NRC Authority Over Discrete NORM.*" The bottom line of this report was that the NRC should not seek legislative authority over discrete NORM and the NRC should continue to work with the Environmental Protection Agency and inform the Conference of Radiation Control Program Directors that the NRC would not seek legislative authority over NORM. On October 28, 1992, a letter was sent to CRCPD informing them of the conclusions of the report.

ATOMIC ENERGY CONTROL BOARD OF CANADA
The federal government in Canada has no plans for NORM regulations. Action in this area is being left to the provinces.

ALBERTA, BRITISH COLUMBIA, AND SASKATCHEWAN
These three western provinces have formed a committee of government and industrial representatives to set guidelines for the control of NORM. Six guidelines are planned:

1. Overview of NORM issues
2. Transportation
3. Worker protection
4. NORM management (NORM wastes, disposal options, etc.)
5. NORM monitoring and instrumentation
6. Classifications of NORM

The committee last met November 25, 1992. Public consultations will be part of the process of developing the guidelines. There is no timetable for finalization of the NORM guidelines.

CONFERENCE OF RADIATION CONTROL PROGRAM DIRECTORS
The CRCPD is not a regulatory agency, per se, but they are developing guidelines to be used by the states in the development of regulations for the control of NORM. *Part N - Regulation and Licensing of Naturally Occurring Radioactive Materials (NORM)* has still not been finalized (it is in its 7th draft) Some of the program directors want the guidelines finalized in the near future. Terry Devine of CRCPD has prepared a *Table of Broker Services,* particularly an updated listing of radioactive waste disposal services. This listing contains new information in this rapidly changing area. Disposal sites close, policies change, etc. A number of changes in services available is expected in the next few months. The listing or table is available from CRCPD. The military has extensive problems with the disposal of NORM wastes. For example, there are literally warehouses full of radium paint wastes which had been used on instrument dials, etc. ■

CLEANUP COSTS

A 30 foot circle, 4 inches deep, around a well, contains about 1,000 cubic feet. If contaminated with NORM, the costs of disposing of this contaminated soil at Envirocare of Utah would be almost $40,000, not including the costs of removing the soil, packing it and transporting it to Utah. ■

NORM "INCIDENTS"

Three incidents involving potential NORM contamination of unrestricted areas occurred recently. Two involved radon in propane in Canada and the other was a potential radium problem in the electrical generation industry.

1. A pickup truck operator in British Columbia had a radiation survey meter in his truck. He noted that when the meter was on and held near the truck's propane tank, the meter indicated significant radiation. The plant manager where the propane was produced and the company's vice-president of operations talked with the driver of the truck and "calmed" him down by informing him of the origin of the radiation (radon contamination in the fresh fuel) and pointing out that the radiations from the radon contamination posed no health threat to the driver or other consumers of the contaminated propane.

2. A load of scrap steel in Alberta was thought to be contaminated with radioactive material (the truck set off gate radiation monitors) and was almost returned to the shipper. It was subsequently found that the propane tank on the truck was the source of the radiation and not the steel. The propane in the tank was fresh and was contaminated with radon.

Radon contaminated propane is apparently an extensive problem in parts of Canada suggesting the importance of a prepared "public relations statement" to answer inquiries and concerns from the public, the media, and employees.

3. The third incident involving NORM was not in the petroleum industry but does show how significant NORM contamination of public areas can occur. A report from Wisconsin said that a recent fly through the stacks of a coal power plant found "extremely" high levels of radium-226. ■

RADIUM EXEMPT CONCENTRATIONS - 5 pCi VERSUS 30 pCi

Considerable controversy is developing within the regulatory agencies as to what level of radium is considered safe for areas or facilities where uses or access are unrestricted. Several states have or are proposing that 30 pCi radium per gram of soil or material is a safe level. Some of these states have tied the 30 pCi level to the radon emanation rate from the material. If the radon emanation rate is less than 20 pCi per second per square meter, 30 pCi per gram is safe. Texas and Mississippi use the 30 pCi level with the radon emanation rate criterion, Louisiana has essentially scrapped the radon emanation rate criterion, and Oklahoma is proposing 30 pCi per gram irrespective of the radon emanation rate.

Other states and the CRCPD propose that 5 pCi per gram is the safe concentration. These states include Michigan and Kentucky.

Florida does not like the 5 pCi level -- many areas along the gulf coast (and in other parts of the country) have naturally occurring background levels of radium above 5 pCi per gram of soil.

There is much controversy over what the "true" radon emanation rates are from scales, sludges, etc. Also there is controversy over what the "true" gamma radiation doses are from various concentrations of radium and its decay products in soil, etc.

What is obviously needed are better methods and techniques for measuring radon emanation rates and better techniques for monitoring gamma radiation doses from contaminated soils, etc. Coupled with the need for better measurement techniques, in depth and accurate risk assessment calculations are needed.

As an alternate to setting specific radium exempt levels, consideration might be given to tying the exempt levels to radium concentration levels in the area. As Terry Devine (CRCPD) has pointed out, four times background for unrestricted areas and forty times background for radiation area workers may be a solution to the controversies. This is a long adopted standard for radiation in atomic energy regulations.

Although the EPA is not proposing NORM regulations at present, indications are that they will have regulations in the future. Based on past actions and guidelines proposed for radon levels in homes and other buildings it can be expected that the EPA will set the radium exempt level nearer to 5 pCi per gram than to 30 pCi. ■

The Arkansas and Mississippi NORM Regulations

Arkansas and Mississippi joined Louisiana in 1992 in having regulations for the control of NORM in effect.

The Arkansas regulations became effective June 26, 1992. The regulations are essentially identical to the Draft 7 CRCPD guidelines. Arkansas uses 5 pCi radium per gram of material as the exempt concentration.

The Mississippi regulations became effective November 15, 1992. The Mississippi regulations (Section N together with parts of Section C from their general radiation regulations) are essentially the same as Part N of the CRCPD guidelines, Mississippi has expanded the SCOPE of the regulations by adding wording that spells out areas applicable to the petroleum

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THE ARKANSAS AND MISSISSIPPI NORM REGULATIONS

(Continued)

industry. For example, the SCOPE Section (801.N.2) says "*These regulations also apply to sludges and scale deposits in tubulars and equipment and to soil or water contaminated by the cleaning of scale deposits. These regulations include the contamination of soil from produced water. This section also addresses waste generation, waste management, transfer, and disposal with regard to both inactive and active sites, and facilities involved in storage and/or cleaning of tubulars and contaminated equipment. In the case of closed or inactive pits, surveys are required only at the time of transfer for unrestricted use.*" The Mississippi regulations use the 5/30 pCi per gram exemption for radium depending on the radon emanation rate. Radiation readings are also a criterion for exemption. Produced water is exempted from the regulations if the water is reinjected.

Both the Arkansas and Mississippi regulations as well as the CRCPD guidelines specifically include polonium-210 in their tables of *Acceptable Surface Concentration Levels for NORM.* Polonium-210 is an important contaminant in the natural gas and gas liquids industry. ■

ANNUAL RADIATION DOSE LIMIT OF 0.054 MREM/YR?

The Minnesota Department of Health (MDH) recently proposed that the annual permissable radiation dose be limited to 0.054 millirem per year (mrem/yr) or 54 microrem per year for members of the public! Such a proposal is contrary to the recommendations of scientific advisory organizations and to the basic ethics of public health practice. The National Council on Radiation Protection (NCRP) recommends a dose limit of 100 m[illegible]/yr from manmade sources for individual members of the public. [illegible] Nuclear Regulatry Commission has adopted this [illegible]ecommenda[illegible]s basic dose limit applicable to any licensed facility. The U.S. Enviro[illegible]ental Protection Agency imposes a limit of 25 mrem/yr to any member of the public from nuclear fuel cycle facilities. An annual dose of 25 mrem/yr is approximately 10% of the average dose from natural background radiation, and is less than half of the increase that one encounters when moving from a southeastern state to the Rocky Mountain region. An incremental annual dose of 25 mrem is just large enough to be measured, thereby allowing legitimate verification of compliance, An annual dose of 100 mrem is much too small to produce any detectable biological effects in any exposed individual.

The MDH proposal for a limit of 0.054 mrem/yr to individual members of the public is of great concern. This incremental dose rate is not only impossible to measure, but it is equal to the calculated increase in dose rate incurred by an increase of 14 feet in altitude due to natural cosmic radiation exposure. This is equivalent to saying that the maximum acceptable risk from a specific radiation source is the same as the added radiation risk that would accrue from living on the third floor instead of the first floor of a building.

Does Minnesota realize what the cost would be to achieve such low doses? If they do know, how can they ignore such considerations? They appear willing to forego other, much greater benefits that would be sacrificed. The risks versus benefits must be balanced on a daily basis. All risks should be evaluated with similar comparison. There are nearly 1,000 highway deaths each week in the U.S. They could be reduced or nearly eliminated by reducing the speed limit from 55 mph to a zero risk value such as 5 mph. The trade-off is too great; the costs would far exceed the benefits. This example is no more unreasonable that the MDH proposing a limit of 0.054 mrem/yr.

It is the belief of radiation protection professionals that the MDH limit of 0.054 mrem/yr is unacceptable as a general limit for the following reasons:

1. It appears that current epidemiological data on population exposed to ionizing radiation have not been taken into consideration.
2. The statistical fluctuation of natural background radiation (~100 mrem/yr) is orders of magnitude greater that the proposed MDH limit of 0.054 mrem/yr. A single cross-country flight will result in an accumulated radiation exposure of about 2.4 mrem, or 44 times the MDH proposed annual dose limit.
3. The cost to facilities and institutions in achieving the proposed limit would be astronomical compared to the benefits incurred.

The unwarranted fears of radiation expressed by many people and the good intentions of government to accommodate such public concerns is recognized. However, it is in the best interests of the public to follow nationally recommended limits based on scientific recommendations developed through an impartial consensus process.

Although the proposed limit is for radiation exposure to the general public, can similar proposals for radiation exposure to employees on the job be very far behind? ■

NORM Training Course Offered by OGCI

OGCI (Oil & Gas Consultants International, Inc.), a world leader in petroleum training, has scheduled training courses in NORM control for 1993. The course ***NORM Contamination in the Petroleum Industry*** will cover all aspects of NORM contamination and its control, including:

- Fundamentals of Radiation
- Fundamentals of NORM
- NORM (Radium) Contamination
- NORM (Radon) Contamination
- State and Federal Regulations
- NORM Surveys including hands-on practice
- Maintenance Procedures
- Disposal of NORM Wastes
- Decontaminations
- Release of Facilities
- Recommended Programs

This in-depth course is taught by Peter Gray who has a background in nuclear and radiochemistry and 25 years experience in the petroleum industry. Dr. Gray has a Ph.D. in Nuclear Chemistry from the University of California at Berkeley. He took early retirement from Phillips Petroleum Company in 1985 after 25 years with the company. Since 1985, Dr. Gray has been a consultant in NORM contamination in the petroleum industry. During his tenure with Phillips, Dr. Gray was in charge of the company's NORM control program from the discovery of NORM contamination in natural gas and natural gas liquids in 1971 until his retirement in 1985. This background uniquely qualifies Dr. Gray as an instructor of the course -- an instructor who understands the origins of NORM, why it contaminates nearly every oil and gas facility, where the contamination occurs, how to set up programs which protect employees, company facilities, the environment and the public, how to survey for NORM contamination, the available options for the disposal of NORM contaminated wastes, and the federal and state regulations for the control of NORM.

The 1993 schedule for the course ***NORM Contamination in the Petroleum Industry*** is:

April 27 - 30	Houston
Nov 2 - 5	Dallas
Nov 16 - 19	Calgary

In-house courses can be arranged by contacting Joseph Goetz at OGCI..

For information about the course, contact Joseph Goetz, Vice President, OGCI, 4554 South Harvard Avenue, Tulsa, OK 74135, 800-821-5933. Or contact Peter Gray at 918-250-6042 for information about the course content. ■

NORM contamination is to be respected --- not feared

ADVERTISING AND THE NORM REPORT

As you are aware, advertising has not previously been included in The NORM Report. However, upon reflecting on the rising costs of publishing the newsletter, it has been decided something must be done. Publication is getting more expensive as the mailing list grows, and as the size of the newsletter increases with some issues (e.g., this issue). There appears to be only two obvious ways to pay for the publication -- charging for it (a subscription fee) or by including advertising.

It has been decided to try the advertising route first. I prefer this because I believe there is a dearth of information on companies, for example, who provide services to those with NORM contamination problems. As most are aware, it is a standard practice in the industry for operating companies to use service companies rather than do decontaminations, waste disposals, etc, themselves. But from the phone calls I receive, the companies providing these services are not generally known. In order that service companies (and others interested) can provide meaningful information on their services, I recommend that half or full page type of advertising be used where the advertiser prepares the text. After all, who best knows the company and can best detail the services provided.

There are currently about 400 names on the mailing list for the newsletter and it is my understanding the newsletter is often widely circulated within the industry. Also, essentially everyone receiving the newsletter is interested in NORM and will probably be interested in what is said by advertisers. No decision has been made concerning including business card sized advertisements. It is expected that advertising will not exceed one to one and a half pages maximum. If the advertising route is unsuccessful, the newsletter may have to be sold by subscription. Please call 918-250-6042 with your comments or for more information. ■