The NORM Technology Connection Web Site: Streamlined Access to NORM-Related Service Company and Regulatory Information*

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ABSTRACT

Argonne National Laboratory has developed an Internet web site providing access to critical information needed to support decisions on the management and disposal of wastes containing naturally occurring radioactive material (NORM). The NORM Technology Connection web site provides current information on (1) service companies that provide support on NORM issues (e.g., site characterization and remediation, sample analysis, radiation safety training, disposal) and (2) existing applicable NORM regulations and guidelines. A third element of the site is an electronic mail list that allows users to post or respond to questions about the management of NORM. Development of the NORM Technology Connection web site was funded by the U.S. Department of Energy, Office of Fossil Energy. It is hosted and maintained by the Interstate Oil and Gas Compact Commission. The web site is publicly available; access is free, as is participation by any of the service companies.

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INTRODUCTION

On behalf of the U.S. Department of Energy, Office of Fossil Energy, and the Interstate Oil and Gas Compact Commission (IOGCC), Argonne National Laboratory recently launched the NORM Technology Connection web site (http://www.iogcc.state.ok.us/NORM). The web site provides the petroleum industry with streamlined access to information specific to the management of naturally occurring radioactive materials (NORM).

The term NORM includes all radiation that occurs naturally throughout our environment. In addition to radiation originating from the sun and deep space, NORM originating on earth is found in our bodies, the food we eat, the places we live and work, and the ground we live on. For the most part, humans have adapted to radiation exposures resulting from background concentrations of NORM (i.e., the normal, ambient concentrations of radiation). Certain industrial processes, however, can cause NORM to accumulate at concentrations greater than natural background levels. The petroleum industry, for example, is one of several industries that generate large volumes of NORM-bearing wastes.

Petroleum industry NORM accumulates when produced water from hydrocarbon reservoirs carries small quantities of radium to the surface. Over time, the radium — typically radium-226 and, to a lesser extent, radium-228 — can concentrate in scales and sludges that accumulate inside pieces of equipment. These scales and sludges can contaminate soils and equipment. The presence of NORM in concentrations that exceed natural background levels may present a potential human health risk, and, as a result, the management and disposal of NORM-bearing wastes have become substantial issues for some oil and gas operators.

With the advent of NORM regulations at the state level, operators face the challenge of ensuring that NORM-bearing wastes are managed properly, yet at the lowest possible cost. The NORM Technology Connection web site will help the industry meet the challenge posed by NORM management by allowing operators to determine what commercial services are available, identify and obtain copies of the applicable regulations, and communicate with others who have relevant experience and knowledge. The NORM Technology Connection web site is publicly available and user access is free.

COMPONENTS OF THE WEB SITE

The NORM Technology Connection web site has three main components: (1) a database of information about NORM service companies, (2) a database of information about existing applicable NORM regulations and guidelines, and (3) an email-hosted discussion forum within which users can post and respond to questions about NORM management. Each of these components, as described below, is accessible from the web site’s home page (shown in Figure 1).
Service Company Information

One of the main components of the NORM Technology Connection web site is a database of information about companies that provide various NORM services, such as (1) site surveys, (2) site remediation, (3) sample analysis, (4) waste disposal, (5) equipment cleaning and reconditioning, (6) radiation safety and/or NORM training, (7) health and safety plan development, (8) instrument provision or calibration, and (9) other consulting services. This database can be accessed under the portion of the web site titled “Technology & Services.”

Company-specific information that is profiled on the web site includes current contact information and a brief description of the company’s capabilities. If available, email addresses and a link to the company’s own web site also are provided. Individual companies are responsible for the accuracy and completeness of the information posted on the web site. Company participation is free, meaning that any company wishing to post information about itself will be able to do so at no charge. An individual seeking to post information about his or her company can do so by navigating through the portion of the web site titled “Add/Change Company Profile.” The user must establish a unique user name and password in order to log in to the web site. Once logged in, the user is prompted to complete a questionnaire designed to capture the information that will be posted. This information can be edited at any time after it has been submitted to the web site, provided the unique user name and password are provided when logging in.

Individuals seeking information about NORM service companies can search the database to find companies providing a specific type of service — for example, to find all NORM disposal companies — and/or to find companies providing services within their state. Users seeking such information can interact with the database by navigating through the portion of the web site titled “Search for Services.” This portion of the web site, shown in Figure 2, prompts the user to pick the type of NORM service needed. More than one type of service can be selected. For example, the user can search simultaneously for all companies providing NORM disposal services, as well as for companies that provide sample analysis services. In addition, the user also is prompted to identify the state within which the services are required. This feature was included because although most NORM service providers work at a national level, some restrict their business to a specific state. After the search parameters are selected, the database will generate a list of companies providing the selected service(s) in the selected state(s). From this list, the user then can access the company information profiled in the database.

Because service company information profiled on the NORM Technology Connection web site is likely to change over time (e.g., as a new company is added or the information for an existing company changes), users can elect to receive email messages notifying them of changes to the database. This service is available through the portion of the web site titled “Keep Me Informed.” The user can customize the type of updates received by selecting specific parameters. For example, a user can elect to be notified only of changes involving companies that provide NORM disposal services or only of changes for companies providing services in Texas. The email updates can be scheduled for a weekly, monthly, or quarterly frequency.
Regulatory Information

Another key component of the NORM Technology Connection web site provides access to information about the regulation of NORM. This component can be accessed through the portion of the web site titled “Regulations & Guidelines.” Under the portion titled “Introduction,” users can access general information about how NORM is regulated at the federal and state levels. A series of interactive links take the user to supplementary text on these issues.

Because NORM is primarily regulated at the state level, a major feature of the NORM Technology Connection web site is a database of state agencies that have jurisdiction over petroleum industry NORM. This database can be accessed through the portion of the web site titled “State Regulations & Guidelines” (Figure 3). On a state-by-state basis, users can (1) determine which state agencies have jurisdiction over petroleum industry NORM; (2) obtain contact information for each agency, including agency-hosted web sites; (3) find the title and citation for applicable regulations and/or guidelines; and (4) access electronic copies of the regulations and guidelines, if the state agency has made them available on the Internet. Figure 4 shows, as an example, the state regulatory information that is available for the state of Texas. Information presented in this section of the web site is maintained by the IOGCC.

In addition to the regulatory information discussed above, general information about organizations that have been active in the development of NORM regulatory guidelines, such as the Conference of Radiation Control Program Directors, Inc., and the Health Physics Society, is accessible through the portion of the web site titled “Related Information.” Active links to other Internet sites containing information relevant to NORM and/or the petroleum industry are accessible through the portion of the web site titled “Links to Useful Sites.”

Email Discussion List

A third component of the NORM Technology Connection web site is a discussion forum enabling individuals to post and respond to specific questions related to NORM management. The discussion forum, which is accessed under the portion of the web site titled “Discussion List,” is served by an email list. Individuals may subscribe and unsubscribe at any time. In addition, an archive of past messages posted to the discussion forum is maintained and can be reviewed by any user.

INTERNET SOFTWARE TECHNOLOGY

The technologies behind the NORM Technology Connection web site are HyperText Markup Language (HTML), Microsoft Access™, and ColdFusion™. HTML is the standard language for web pages. Microsoft Access™ is the database format that is used to store company and state regulatory information. ColdFusion™ is a commercially available software package that facilitates connecting databases to web pages through HTML.

The Allaire ColdFusion™ Application Server provides dynamic server-side processing, such as database queries and typical programming structures (e.g., variables,
if statements, loops). ColdFusion™ pages are created in ColdFusion™ Studio on a client machine using a combination of HTML and ColdFusion Markup Language (CFML). The ColdFusion™ Application Server software resides on the web server to dynamically parse, or execute, CFML code into standard HTML for viewing over the Internet through any web browser.
This site provides access to current information about service companies that can help oil and gas operators address all aspects of NORM management issues. It also provides access to applicable regulations and to contacts in state regulatory agencies. In addition, users can submit specific questions about NORM technologies, regulations, or related issues to the NORM Discussion List.

What is NORM? provides you a brief description of NORM, how it forms, and where it accumulates.

Figure 1. Screen capture of the home page of the NORM Technology Connection web site.

Search Criteria
- Radiation Safety Training
- Site Surveys
- Health and Safety Plans
- Site Remediation
- Equipment Cleaning / Reconditioning
- Sample Analysis
- Disposal
- Consulting Services
- Instrumentation/Calibration
- NORM Training Course
- All States
- Alabama
- Alaska

This page allows users that need NORM services to search a database for matching providers. The information included in this database has been supplied by the companies offering the services. The IDCC neither guarantees the accuracy of any information on this site nor endorses any company participating in this service. Please read the disclaimer for more details. In some states, certain types of NORM services (e.g., decontamination, site remediation) can only be performed by companies holding specific licenses. Therefore, it is recommended that users contact state authorities before contracting with any company to verify that state requirements are met.

The match is determined both by the location and type of service desired. The process for searching the database is:

1. Set the search criteria in the upper left side frame. Ten types of services are listed; choose all that you might need. You may also select from a list of applicable states or select "All States". After the criteria have been specified, click the "Search Now" button at the top.
2. The names of the participating companies that provide any of the services specified in the criteria and that operate in the state(s) specified will be shown in a new window.
3. The company details can be viewed by clicking the company name in the left frame. The details include contact information, a full list of services provided, and a short technical summary of the company's capabilities. The information displayed has been provided by and is maintained by the company.

Figure 2. Screen capture of the "Search for Services" page in the NORM Technology Connection web site.
Click on a state, or select it from the text list below the map, to review the existing state-specific regulatory requirements applicable to NORM-containing waste.

Figure 3. Screen capture of the “State Regulations & Guidelines” page of the NORM Technology Connection web site.

Figure 4. Screen capture of the page of the NORM Technology Connection web site displaying regulatory information for the state of Texas.
Summary of Figure Captions

Figure 1. Screen capture of the home page of the NORM Technology Connection web site.

Figure 2. Screen capture of the “Search for Services” page in the NORM Technology Connection web site.

Figure 3. Screen capture of the “State Regulations & Guidelines” page of the NORM Technology Connection web site.

Figure 4. Screen capture of the page of the NORM Technology Connection web site displaying regulatory information for the state of Texas.