This paper will summarize both the environmental permitting requirements in order to perform typical D&D activities and provide a brief discourse of germane Nuclear Regulatory Commission decommissioning requirements. Also included will be a real life example outline of permitting required for complete D&D of an NRC licensed commercial facility.

INTRODUCTION

As the new millennium commences, only approximately 55 years have elapsed since the advent of harnessing nuclear energy. In that time this once promising energy source has become the black sheep of our modern society. Consider that in the 1970’s, many nuclear power plants had been built with many more being planned. In addition, U.S. government facilities were churning out fissile material to support weapons production as the cold war escalated.

Two events then occurred (albeit almost 20 years apart) which transformed this industry into one with promise, to one headed for possible extinction. The first event was the well-known partial core meltdown at GPU’s Three Mile Island (TMI) nuclear power reactor in 1977. The second, the end of the cold war coinciding with the breakup of the Soviet Bloc. Following TMI, all planned new nuclear power plant construction was halted and many plants in various stages of construction were mothballed without ever generating a watt of power. Following the end of the cold war, many of the government’s Department of Energy (DOE) facilities were idled and placed in standdown mode in anticipation of future decommissioning.

These two separate events triggered the start of the safe decommissioning of these facilities as they ended their useful lives. Given the significant hazards associated with the decommissioning process, these activities are almost always costly affairs. The nuclear hazards associated with decommissioning also involve initiating negotiations with other regulatory agencies in order to mitigate the environmental hazards encountered, negotiations which will almost always result in crafting of a compliance strategy taking into account present environmental regulatory requirements.

This paper will give an outline of the decommissioning process including the license termination and environmental compliance and permitting requirements associated with decommissioning

THE NRC DECOMMISSIONING REQUIREMENTS

Title 10 of the Code of Federal Regulations defines decommissioning as the safe removal of a facility from service and reduction of residual radioactivity to a level that permits termination of the Nuclear Regulatory Commission (NRC) license. Once a licensee announces its decision to permanently cease operations utilizing radioactive materials, the decommissioning process is automatically initiated and specific decisions regarding the decommissioning process must be made within 2 years.

Following the decision to seek termination of the license, the licensee develops a plan to demonstrate that the site is suitable for release in accordance with the criteria for decommissioning in Subpart E, “Radiological Criteria for License Termination,” of 10 CFR Part 20. These requirements were published as a final regulation on July 21, 1997 (62 FR 39058).
The new decommissioning rule allows for termination of a license and release for unrestricted use if the following criteria are met. First, the residual radioactivity above background results in a dose to an average member of the critical group that does not exceed 25 mrem/yr (0.25 mSv/yr). Second, the residual radioactivity has been reduced to levels that are as low as reasonably achievable (ALARA). The new rule also allows for termination of a license and release for restricted use if other specified conditions are met.

Under each type of license termination, a dose assessment is performed to determine the levels of residual radioactivity which meet the dose constraints. NRC guidance on dose assessment is provided in Draft Regulatory Guide 4006, “Demonstrating Compliance with the Radiological Criteria for License Termination” and Draft NUREG – 1549, “Using Decision Methods for Dose Assessment to Comply with Radiological Criteria for License Termination.” Utilizing the new rule and guidance, the licensee derives release criteria for soil and bulk material in pCi/g and release criteria for building surfaces (dpm/100 cm²).

After the release criteria is determined, remediation is performed on the areas of the site that are in excess of the criteria. This may include removal of soils, washing of building surfaces, or scabbling.

Following remediation, a final status survey must be performed to demonstrate that the area meets the radiological release criteria. The NRC endorses the final status survey method described in NUREG-1575, “Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM).” The MARSSIM provides information on planning, conducting, evaluating, and documenting surface soil and building surface final status radiological surveys for demonstrating compliance with dose or risk-based regulations or standards.

After the final status survey has been completed, the licensee submits the final status survey report to the NRC for approval and license termination.

DECOMMISSIONING PERMITTING

During the decommissioning process one typically finds that environmental permits will be required to facilitate radionuclide decontamination. As with most licensed sites, radionuclide contamination may be found both within site structures and commingled in with the site soils and groundwater. Since the decommissioning process requires the removal of radionuclide contamination as described above, these removal activities will involve generation of air, water emissions along with disturbances of wetlands or regulated coastal areas. A discussion of the germane permitting and regulatory requirements surrounding each regulated activity follows.

Clean Water Act Regulatory Requirements

When performing facility decommissioning activities, one can rest assured that wastewater streams will inevitably be generated. In addition there is a high potential that excavations of contaminated soils in either wetland zones or navigable waterways may be required during site decommissioning. Whether performing activities affecting wetlands, or discharging of generated wastewaters, one must adhere to the regulatory provisions set forth by the Clean Water Act (CWA) as these activities fall under the regulatory purview of the CWA.

Both the discharge of wastewaters and wetlands excavations are regulated using any one of the three below CWA permitting/authorization mechanisms.

1. National Pollutant Discharge Elimination System (NPDES) permitting required for:
   - Process water discharges
   - Industrial Stormwater Discharges
   - Stormwater Discharges associated with Construction Activities

2. Pre-Treatment permitting for Publicly Owned Treatment Works (POTW) wastewater discharges

3. Wetlands permitting (a.k.a. CWA 404 permits)

The purpose of the CWA is to regulate the discharge of pollutants into “Waters of the United States”. Discharges can be either direct or indirect. Direct discharges are those which flow through outfalls into “Waters of the United
States” under an NPDES permit. Indirect discharges are those flows which are directed into POTW’s through sewage pipes (or are transported) to the headworks of a POTW. The POTW secures the NPDES permit through which the indirect discharger’s wastes enter the “Waters of the United States”.

Wetlands and navigable waterways are also included in the statutory definition of “Waters of the United States” and hence any activities resulting in the disturbance or subsequent discharge of pollutants into wetlands or navigable waterways is also a CWA regulated activity. These activities are regulated by the U.S. Army, Corps of Engineers by convention with oversight by Environmental Protection Agency (EPA). All other permitting and enforcement under the CWA (e.g. NPDES permitting) is coordinated by EPA. A discussion of 404 permitting will be covered in a later section.

**NPDES Process Water Discharge Permits**

As stated above, no person or entity may discharge wastewaters into “Waters of the United States” without an NPDES permit. Note that the definitions of “discharge”, “outfall”, and “Waters of the United States” are regulatory definitions. Hence, one should consult and evaluate carefully whether an activity would be classified as a “discharge”.

NPDES permitted discharges typically occur as process water discharges from a facility. Some examples include a discharge from a water treatment plant, a discharge from an oil skimmer, a discharge from an asbestos shower, any sanitary waste discharges, etc. If these operations or any other similar operations during decommissioning activities result in a discharge into “Waters of the United States”, then an NPDES permit is a must.

**NPDES Industrial & Construction Stormwater Permits**

Another type of water discharge regulated under the NPDES permitting system is stormwater discharges. Stormwater discharges were first regulated by the CWA reauthorization of 1987, with permitting of these discharges required shortly thereafter. EPA classified two types of stormwater discharges requiring NPDES permits: Stormwater Associated with Industrial Activity, and Stormwater Associated with Construction Activities (a.k.a. Construction Stormwater Permit). Although EPA regulates these discharges separately, the Construction Stormwater discharges are essentially a subset of Stormwater Associated with Industrial Activity.

EPA defines Stormwater Associated with Industrial Activity as:

> “...the discharge from any conveyance which is used for collecting and conveying storm water and which is directly related to manufacturing, processing or raw materials storage areas at an industrial plant.”

Hence, if one performs a decommissioning operation which discharges Stormwater Associated with Industrial Activity, this entity must obtain an NPDES permit prior to commencing said discharges.

In actuality, unless the facility being decommissioned has been essentially abandoned, most facilities should already have in place an NPDES permit for Stormwater Associated with Industrial Activity. Given that the decommissioning process will result in modifications to either the facility, the stormwater flows, or both, modification of this permit will be almost a certainty. Quite often one will find that the discharges encountered during decommissioning will fit the description of construction stormwater, requiring the facility to secure an NPDES Construction Stormwater Permit.

As stated above, Stormwater Associated with Construction Activities has been included as a subset of EPA’s definition of Stormwater Associated with Industrial Activities. Included in EPA’s definition of Stormwater Associated with Construction Activities are:

> “Construction activities including clearing, grading and excavation activities except operations that result in the disturbance of less than five acres of total land area which are not part of a larger common plan of development or sale.”
Hence Construction Stormwater Permits are currently required only for those activities which disturb five acres or greater land area. Note that the five acre limit cannot be circumvented by parceling a site into less than five acre plats when the total amount of land being disturbed is part of a common plan. For example, if a site is being decommissioned under a site decommissioning plan, and this plan calls for excavation of soils resulting in 6 acres of land disturbance, one cannot circumvent the 5 acre trigger by parceling the project into two 3 acre plats and thereby avoid Construction Stormwater Permitting.

An item of note. On January 9, 1998 EPA issued its Phase II stormwater proposal to refine the existing NPDES stormwater permitting regulations. In the proposal, EPA plans to expand the existing permitting trigger to include those sites which disturb between 1 and 5 acres of land. Hence, those decommissioning projects which disturb greater than one acre of land would be required to obtain an NPDES Construction Stormwater Permit prior to commencement of the activities should the proposal be finalized in its present form. This rule is expected to be finalized by December 1, 1999*.

*Note: The final rulemaking was published in the Federal Register on December 8, 1999 at 64 FR 68722.

Pre-Treatment Permits for POTW Discharges

In addition to regulation of direct discharges into “Waters of the United States”, the CWA also establishes regulatory requirements for indirect discharges into POTW’s which then ultimately discharge through the POTW’s permitted outfall(s). The pre-treatment requirements are designed to ensure that (1) no harm comes to the POTW’s operation (such as damage to the plant’s bioreactor), and (2) to prevent pass through of waste without the waste being adequately treated (such as expecting treatment of a metals laden waste in a bioreactor).

During decommissioning, one generally finds that two generic wastestreams are generated (other than stormwater), sanitary wastes and process wastes resulting from industrial or decontamination activities. Sanitary wastes are typically those types that would be representative of those generated at any other commercial institution not undergoing decommissioning. Examples of sanitary wastes include wastewaters from water closets, cafeteria wastewaters, etc. Process wastes are typically those wastes generated as a direct result of industrial or decommissioning activities. Examples include contact and non-contact cooling waters, sink and shower water from personnel decontamination activities (e.g. asbestos showers, radiological decontamination stations), wastewaters from equipment decontamination activities (e.g. water blasters, rinsewaters, containerized legacy wastes stored onsite, etc.)

Most POTW’s do not require special documentation for connection of sanitary wastewater discharge hardware to the POTW collection system. However, addition of process wastewaters would very likely trigger pre-treatment permitting. If the wastewater is of such a nature that it could cause interference or pass through of contaminants, then pre-treatment could be required as part of the pre-treatment permit.

NRC Sewer Disposal Requirements

In addition to the EPA’s pre-treatment requirements for release to POTW’s, the NRC imposes additional requirements for these types of discharges. An NRC licensee undergoing decommissioning may dispose of radioactive material in the sanitary sewerage under 10 CFR 20 if each of the following requirements is met:

1) The material is readily soluble (or is readily dispersible biological material) in water;
2) The concentration of material released in one month does not exceed the concentration listed in Table 3 of Appendix B to 10 CFR 20. If more than one radionuclide is released, the sum of fractions applies
3) The total quantity of licensed and other radioactive material released in one year does not exceed the following limits:

<table>
<thead>
<tr>
<th>Isotope</th>
<th>Maximum Quantity</th>
<th>Maximum Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>H-3</td>
<td>185 GBq</td>
<td>5 Ci</td>
</tr>
<tr>
<td>C-14</td>
<td>37 GBq</td>
<td>1 Ci</td>
</tr>
<tr>
<td>All other isotopes combined</td>
<td>37 GBq</td>
<td>1 Ci</td>
</tr>
</tbody>
</table>


Disposals which meet these requirements do not require NRC approval or permit. Licensees may also request approval of disposal procedures which are not otherwise authorized in the regulations. The application requirements appear in 10 CFR 20.2002.

**Wetlands and Navigable Waterways Permitting**

During the site characterization phase of decommissioning, it is commonly found that a portion of the facility is classified as a wetland. In addition, in almost all instances, the facility being decommissioned is located next to a navigable waterway. It is usually into this waterway or possibly any delineated site wetlands that the facility’s NPDES permitted outfall pipes discharged. Should it be discovered that remediation is necessary either adjacent to or within the wetland, or navigable waterway, or both (possibly as a result of prior illicit discharges) one must obtain permission from the appropriate regulatory body prior to excavation start.

Excavations in navigable waterways or wetlands are typically regulated by both the U.S. Army, Corps of Engineers, and the facility’s state environmental regulatory agency. The below Table outlines the overseeing body and the corresponding statute:

<table>
<thead>
<tr>
<th>Wetlands</th>
<th>CWA (404)*</th>
<th>CZMA**</th>
<th>R&amp;HA of 1899 Section 10***</th>
<th>State Regs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wetlands</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Navigable Waterways (NW)</td>
<td>(If NW also a wetland)</td>
<td>(If NW in a designated coastal zone)</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Coastal Zone</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>(If designated coastal zone also a wetland)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*  Section 404 of the CWA  
**  Coastal Zone Management Act of 1972  
***  Section 10 of the Rivers and Harbors Act of 1899

The term “404” permit is used in the context of wetlands disturbance activities as it is within Section 404 of the CWA that the laws governing wetlands activities are outlined. Congress assigned the U.S. Army, Corps of Engineers regulatory purview of Section 404 permitting with EPA operating in an oversight capacity. Wetlands permits are hence issued by the Corps.

Navigable waterway permits are issued under the authority of Section 10 of the Rivers and Harbors Act of 1899. This statute was originally passed to prevent dumping into navigable waterways from becoming a hazard to navigation by marine vessels. It is most used to regulate dredging activities in navigable waterways, including necessary excavations in these waterways to facilitate removal of contamination during decommissioning activities.

Given that navigable waterways and wetlands are quite often directly adjacent to one another and furthermore hydrologically connected, a single D&D excavation can affect both types waterbodies. In this instance the Corps typically will issue a single permit under the authority of both statutes, namely, Section 404 of the CWA and Section 10 of the Rivers and Harbors Act.

The mechanism for permitting is as follows. Many types of permitting activities can be classified as being very similar in nature. For example, excavations to facilitate remediation of contaminated areas are very much alike in that contaminated material will be removed, clean material put back to restore the cut, with the operation typically being subject to regulatory oversight by a governing body. For these situations, the Corps has instituted what is called the General Permitting System.
The Corps has published about 40 general permits for use by the regulated community. These permits were originally codified in Title 33 of the Code of Federal Regulations. However, on December 13, 1996 a final rule was promulgated by the Corps (61 FR 65874) where it was stated:

“The NWPs will no longer appear in the Code of Federal Regulations (CFR) but will be published in the Federal Register and announced, with regional conditions, in the public notices issued by Corps district offices, and included on the Internet.”

Hence, to examine the text of any one General Permit, an entity must secure a copy of the December 13, 1996 a Final Rule or contact the Corps directly.

If a project’s wetlands or navigable waterways activities are sufficiently unique that it is not eligible for coverage under the General Permitting System, the project may be required to obtain an Individual Permit for the activity. The Corps will in this instance issue a specific permit for the applicant’s activity with unique terms and conditions. Applications for Individual Permits are typically lengthy and detailed with approval a tortuous process. A lengthy lead time must be factored into the Decommissioning schedule should an Individual Permit be required.

In addition to regulation by the Corps, many wetlands and navigable waterway excavations are also regulated by states under state law. A careful examination of the respective state regulatory language where the work is to be performed is a must in order to address possible duplicative (Federal & State) permitting requirements for wetlands and navigable waterway excavations.

Erosion and Sedimentation Control Requirements

When performing excavations associated with Decommissioning Activities (or in some instances, excavations removed from the zone of contamination), it is often necessary to install Best Management Practice (BMP) Erosion & Sedimentation (E&S) Controls to preclude downgradient conveyance of sediment laden runoff to the local receiving stream. The installation of these Controls may be necessitated by permit language in NPDES Construction Stormwater Permits issued for the work, by state regulatory language (based on soil conservation statutes), or by both.

On February 17, 1998, EPA promulgated a Final Rule reissuing NPDES General Permits for Stormwater Construction Activities of 5 acres or more (63 FR 7858; amended by 64 FR 68722 expanding scope to include 1 – 5 acre disturbances). In the rulemaking and permit language, it is required that permittees develop Storm Water Pollution Prevention Plans (SWPPP’s or SWP’s). It is required that these SWPPP’s “… describe and ensure the implementation of practices which will be used to reduce the pollutants in storm water discharges associated with construction activity at the construction site and assure compliance with the terms and conditions of this permit.” (63 FR 7906). Specifically, it is required that the permittee include in the SWPPP “… a description of appropriate control measures (i.e. BMP’s) that will be implemented as part of the construction activity to control pollutants in storm water discharges.” (63 FR 7907). For a description of E&S Control requirements it is suggested the reader consult “Storm Water Management for Construction Activities”, EPA 832-R-92-005.

Alternately, the state where the construction activity is being performed may (and often does) require that any earthmoving activity employ E&S Controls to prevent accelerated erosion of exposed surface areas. Moreover, the state may also require the creation of an E&S Plan document to outline in writing those E&S Controls used to prevent or preclude accelerated erosion. These requirements may or may not be linked to the SWPPP requirements of the NPDES program, so the D&D entity should be prepared to draft and comply with two sets of E&S Control requirements.
Coastal Zone Management Act Requirements

The Federal Coastal Zone Management Act (CZMA) of 1972 grants to the U.S. Secretary of Commerce the power to approve and grant funds for state coastal management plans. This Act also contains guidelines for designation and approval of state programs, and allows states with approved plans the right to review Federal actions to ensure they are consistent with those plans.

On a federal level the regulatory provisions of the CZMA are directed by the National Oceanic and Atmospheric Administration (NOAA). However, in most instances authority for implementation of the CZMA is delegated to authorized states. To date, 33 of the 35 eligible coastal states and U.S. territories have federally approved plans.

Under the CZMA, states with approved plans have the right to review Federal activities (including private activities that require Federal permits) to determine whether they are consistent with the policies of the state's coastal zone management program. If the Federal action is not consistent to "the maximum extent practicable" with the state program, changes must be made before the Federal activity is permitted. For Federal agency actions, the final determination of whether a Federal action is consistent lies with the Secretary of Commerce.

Prior to initiation of Decommissioning activities, it is imperative that in addition to the aforementioned wetlands and navigable waterways requirements one consult the CZMA requirements in order to determine if any additional permits, authorizations, or controls are required if designated Coastal Zones are impacted.

Clean Air Act (CAA) Regulatory Requirements

Generally, no person may construct an air contaminant source without first obtaining a permit in accordance with Clean Air Act (CAA) requirements. EPA has been delegated authority for implementation and enforcement of the CAA provisions. EPA has in turn delegated most of its permitting and enforcement responsibilities to authorized states.

EPA regulation of air contaminant derives from the establishment of National Ambient Air Quality Standards (NAAQS) in the Clean Air Act (CAA). Originally signed into law in 1970, the CAA established NAAQS for 6 ambient air criteria pollutants. These pollutants are Sulfur Oxides, Carbon Oxides, Nitrogen Oxides, Ozone, Lead, and Particulate Matter (e.g. PM\textsubscript{10}). For each of the pollutants, EPA established an ambient air concentration (NAAQS) designed to be protective of human health and the environment.

In order to regulate these criteria pollutants, EPA required that each state develop and submit to EPA a State Implementation Plan (SIP) detailing the methods whereby it will ensure that all areas in their respective states meet the NAAQS. If any one area exceeds the NAAQS, it is deemed to be in non-attainment status and the SIP must identify method(s) describing how the area will be brought into attainment status with the NAAQS.

The most often used method developed by states to comply with the NAAQS provisions has been to establish a permitting system for all air contaminant sources. These permits are used to regulate and reduce the amounts of criteria pollutants emitted from both point and fugitive sources. Note that the Title V permitting regimen is a fairly recent product of the CAA Amendments of 1990 where the old SIP operating permit system harkens from the SIP’s submitted as a result of the original CAA provisions of 1970.

As most states require air quality permits for criteria pollutant emissions, when performing Decommissioning activities where are contaminants are emitted, one is typically required to obtain operating permits for the emissions generated during operations. These permit applications often require that the facility estimate the quantities of pollutants emitted and, accordingly, employ the necessary controls to ensure that these emissions do not result in exceedences of the NAAQS in the specific work area.
In addition other pollutants including Hazardous Air Pollutants or HAP’s (e.g. chromium, cadmium, lead, PCB’s) may also be emitted during D&D activities (for instance during scabbling or contaminated soil excavation activities). The chromium, cadmium, and PCB are classified by EPA as toxic air pollutants and control of these pollutants are covered under EPA’s air toxics (or HAP) provisions discussed below.

Through the CAA of 1970 EPA was delegated the responsibility of developing, listing, and regulating those air contaminants demonstrated to be harmful to both human health and the environment. Prior to the CAAA of 1990, EPA worked on a chemical-by-chemical basis to identify and list those toxic air contaminants or HAP’s (as opposed to criteria contaminants) known to be risks to health. In the time span between the CAA of 1970 and the CAAA of 1990, EPA had listed only seven chemicals (or HAP’s) known to be hazardous to human health and the environment, namely, asbestos, benzene, beryllium, arsenic, mercury, radionuclides, and vinyl chloride. EPA subsequently promulgated “National Emission Standard for Hazardous Air Pollutants” (NESHAPS) for each HAP identified. These NESHAPS outlined the control methods required for sources of HAP emissions.

Given that only seven HAP’s were identified by EPA in an almost 20 year time span, Congress in the CAAA of 1990, modified its HAP approach to one that regulates by industry rather by chemical health risks, and is technology and performance based rather than health based. Accordingly, Congress generated a list of 189 HAP’s (listed in Section 112 of the CAA) believed to cause adverse health or environmental risks to be regulated by EPA over an approximate 10 year time span. EPA is presently in the process for developing NESHAPS for these industrial source categories and their HAP emissions. This new list of 189 HAP’s includes chromium, cadmium, and lead compounds in addition to PCB’s and radionuclides.

In actuality, many states began to regulate HAP’s as part of their SIP’s long before the CAAA of 1990. Therefore, even if one is not a major source of HAP’s, your state may already require permitting under the state’s SIP for sources that generate appreciable quantities of certain HAP’s. An example is Pennsylvania where sources that emit settled particulates, beryllium, sulfates, fluorides, or hydrogen sulfides must be permitted under the state’s SIP permitting system since these have been identified as criteria pollutants in addition to those 6 previously identified by the CAA of 1970.

Hence, in addition to SIP driven permits, the NESHAPS provisions may also require further compliance with an applicable NESHAP provision as necessary (e.g. Asbestos NESHAP 40 CFR 61, Subpart M).

Safe Drinking Water Act Requirements (Class V Wells)

The Safe Drinking Water Act (SDWA) has two primary purposes. The first is to ensure that water emanating from the tap in the U.S. is fit to drink. The second is to prevent the contamination of groundwater in the U.S. This discussion will concentrate primarily on the second purpose; namely, protection of groundwater.

To protect sources of groundwater from intentional or inadvertent contamination, the SDWA established the Underground Injection Control (UIC) program and the Wellhead Protection Program. During D&D, the most likely potentially encounter the decommissioning entity will have with the permitting provisions of the SDWA will be under the UIC program, specifically, the provisions associated with injections into Class V wells.

Under the UIC program, injection of any fluid into a well covered by the UIC program is prohibited unless authorized by a permit or rule. To this end, the UIC program establishes five classes of UIC wells: Class I through Class V. See 40 CFR 146.5 for a description of each well class. Briefly, Class I are wells into which Hazardous Wastes are injected below a water bearing formation; Class II wells receive oil and gas production wastes; Class III wells are wells used to assist with mineral extraction; Class IV wells receive Hazardous Wastes which are injected above or into a water bearing formation.

Class V wells are wells that are not identified in Classes I – IV and comprise the largest class. Typical wells included in Class V include cesspools, septic systems, salt water intrusion barrier wells, and subsidence control wells. Injection of any substance into a well associated with D&D activities (for instance injection of a stabilization agent to reduce the leachability of metals in subsurface soils) would be subject to the permitting requirements for Class V wells. Notably, EPA is currently in the process of promulgating new Class V well standards to considerably restrict the use of these wells for underground injection.
Resource Conservation and Recovery Act (RCRA) Permitting

In a nutshell, no person may treat, store, or dispose of Resource Conservation and Recovery Act (RCRA) Hazardous Waste without a permit. “Treat”, “store”, “dispose”, and “hazardous waste” of these are all RCRA defined terms (refer to 40 CFR 260). There are exceptions to the permitting requirements and these permitting requirements and exceptions are identified at 40 CFR 270. EPA is the primary permitting and enforcement agency for RCRA’s regulatory provisions.

A word of caution. Many states have assumed authority for implementation and enforcement of RCRA regulatory provisions from EPA and, accordingly, have instituted more stringent permitting provisions than those stipulated at the federal level by RCRA. Examination of the hazardous waste regulatory requirements for the state where D&D is being undertaken is essential to ensure compliance with more stringent state provisions.

State Primacy Issues

In many of the aforementioned statutes, there is a built-in provision to allow for delegation of authorization and enforcement to state agencies. This delegation is known as “primacy”. For instance, it may be said that if California has obtained authority for NPDES permitting in that state, it has primacy over that program. The CAA, CWA, RCRA, CZMA all have provisions for delegating primacy of all or part of the regulatory and statutory provisions. Furthermore, states may also become “agreement” states and accordingly coordinate the responsibilities performed by the NRC in lieu of the NRC.

As a general rule, no state may establish regulatory requirements under these requirements that are less stringent than its federal counterpart. Hence, research into permitting (or licensing) requirements should initiate at the federal regulatory level. Research should then proceed to the state level to determine if there are any state permitting provisions that operate in lieu of (if the state has primacy), or in conjunction with the federal permitting program of interest. Finally, a comparison of the state and federal regulatory requirements should be made to ensure that more stringent provisions of respective federal counterparts are addressed.

CASE STUDY

Recently a Fortune 500 Company made the decision to Decontaminate and Decommission (D&D) its NRC licensed facility located in Western Pennsylvania. Key items in the decommissioning schedule were inclusion of the necessary lead time(s) for approval of the license decommissioning plan and permits required for D&D activities.

The decommissioning plan approved by the NRC for the facility required essentially two major milestones be performed prior to license termination: decontamination and deconstruction of the facility structures; and excavation of contaminated soils. Decommissioning was initiated prior to the publication of 10 CFR 20 Subpart E therefore, the cleanup criteria used at the facility were regulatory based rather than dose based. The cleanup criteria were based on NRC guidance in effect at the time of initiation of decommissioning. The criteria used for building surfaces were based on NRC “Policy and Guidance Directive FC 83-23: Termination of Byproduct, Source, and Special Nuclear Material Licenses.” The criteria used for soils were based on FC83-23, a memorandum from NRC to Region III titled “Medical, Academic, and Commercial Use Safety: Evaluation of Acceptability of Proposed Decommissioning Activities,” and a site specific derived criteria for Pu-241. All waste materials exceeding the DP site release criteria would be transported to approved off-site disposal facilities.

The site’s structures were contaminated with both radionuclides and asbestos containing materials. Decontamination included hand removal of the asbestos, and removal of radionuclide contamination by surface scabbling. All air emissions generated during these decontamination activities were passed through HEPA filter banks prior to release to the environment. Asbestos emissions were regulated by the Asbestos NESHAP, while particulate emissions passing through the filter banks (albeit very small) were subject to CAA permitting as either point or fugitive sources.

Soil excavations involved removal of radiologically contaminated soils for offsite disposal. The total disturbed area was greater than 5 acres necessitating that an NPDES Stormwater permit be obtained and Erosion and Sediment
Controls be employed. A small fraction of the excavations resulted in disturbance of delineated wetlands and navigable waterways (the excavations resulted in disturbance of a navigable waterway riverbank). Hence, wetlands and navigable waterways permits were required in accordance with Section 404 of the CWA and Section 10 of the R&HA, respectively. Finally, wetting agents were employed to minimize fugitive dust generation during soils excavating and staging/storage. This wetting eliminated the need for air permitting while performing soil excavations.

A summary of the necessary permits and the resulting regulatory drivers follows.

<table>
<thead>
<tr>
<th>Permit Required</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAA Air Permitting</td>
<td>Dust generation during building decontamination</td>
</tr>
<tr>
<td>CWA Stormwater Permitting</td>
<td>Disturbance of &gt; 5 acres during soils excavations</td>
</tr>
<tr>
<td>CWA 404 Wetlands Permitting</td>
<td>Disturbance of delineated wetlands during soil excavations</td>
</tr>
<tr>
<td>R&amp;HA Section 10 Permitting</td>
<td>Excavation of a riverbank adjacent to a navigable waterway.</td>
</tr>
</tbody>
</table>

Because the facility was not located in a designated coastal zone, no CZMA impacts were encountered.

Also, the state in which the D&D took place had primacy over the CAA and CWA NPDES permitting programs. Therefore, all air permits and stormwater permits were issued by the state agency implementing these programs for EPA. Furthermore, the state had in place additional permitting requirements at a state level for wetland/navigable waterways disturbances. Hence, permits from both the Corps of Engineers and the state agency with oversight for wetland/navigable waterways disturbances were required for these activities.