

A Brief History of the Elevation of Environmental Geology

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Geology has been long-associated with mining, petroleum exploration, seismology and hydrogeology. However, in the mid 1970's, the study of environmental geology and hydrogeology began to rise to the forefront of the profession in the United States.

This movement was initiated by the formation of the U.S. Environmental Protection Agency (USEPA) in December 1970 and the passage of the Safe Drinking Water Act (SDWA) in 1974 to protect public health by regulating the nation's public drinking water supply. The SDWA was amended in 1986 and 1996 and required many actions to protect drinking water and its sources: rivers, lakes, reservoirs, springs, and groundwater wells. The SDWA authorized the USEPA to set national health-based standards for both naturally-occurring and man-made contaminants found in the drinking water supply. The original focus of the SDWA was primarily on treatment as the means of providing safe drinking water at the tap. The 1996 amendments greatly enhanced the existing law by recognizing source water protection, operator training, funding for water system improvements, and public information as important components of safe drinking water.

The passage of the Resource Conservation and Recovery Act (RCRA) of 1976 required federal agencies to assess the impact that debris, debris removal, hazardous wastes, and hazardous waste clean-up projects had on air and water quality and take actions to prevent degradation. RCRA gave EPA the authority to control hazardous waste from the "cradle-to-grave" to facilities that generate hazardous materials and sets forth a framework for the management of non-hazardous waste (42 USC, 6901). In addition to the generation component, the Act included transportation, treatment, storage, and disposal of hazardous waste. RCRA focuses only on active and future facilities.

In December 1980, Congress enacted the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as Superfund. This law created a tax on the chemical and petroleum industries and provided broad Federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health, welfare or the environment. This Act provided more authority to EPA for enforcement (Ruckelshaus, EPA Journal March 1988; Lewis, EPA Journal March 1988).

Congress added Subtitle I to RCRA in 1984 responding to the increasing threat to groundwater posed by leaking

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underground storage tanks (USTs). This legislation required that a comprehensive regulatory program be developed for USTs storing petroleum or other hazardous

substances to protect the public health, welfare or the environment. EPA published regulations requiring owners and operators of new and existing USTs to prevent, detect, and clean up releases. Subtitle I banned the installation of unprotected steel tanks and piping beginning in 1985 and provided a schedule for upgrading existing tanks to meet the established standards. In 1986, RCRA Subtitle I was amended to create the Leaking Underground Storage Tank (LUST) Trust Fund.

The LUST Trust Fund was proposed with two purposes: First, it provided money for overseeing and enforcing corrective action taken by a responsible party, defined as the owner or operator of the leaking UST; second, the Trust Fund provided money for cleanups at UST sites where the owner or operator is unknown, unwilling, or unable to respond, or which require emergency action.

To receive money from the Trust Fund, a state must enter into a cooperative agreement with the federal government to spend the money for its intended purpose. Trust Fund money is divided among EPA regional offices based on a formula that uses state data. The 1986 Subtitle I amendments also established financial responsibility requirements. EPA was directed to publish regulations that would require UST owners and operators to demonstrate they are financially capable of cleaning up releases and compensating third parties for resulting damages (EPA Overview of the Federal UST Program).

These acts provided the incentive for companies to start complying with the stringent new regulations and the regulatory community, and were the beginning of the environmental geology profession. The new rules and regulations included the requirement for responsible and potentially responsible parties to conduct site investigations to assess the effects of either the potential or actual releases of hazardous chemicals on the human health and welfare and the environment. These projects were perfect for the skill set of the geoscientist who collects and interprets subsurface data, identifies the presence of contaminants and evaluates the potential migration of the contaminants (through the soil to the groundwater) based on the observed and interpreted subsurface features. The subsurface impacts were modeled and the risk to human health and welfare was predicted and remedial measures could be determined. These regulations fueled a large growth in both private environmental consulting companies and state regulatory agencies throughout the United States and thus increased the role and presence of the environmental geologist/hydrogeologist in evaluating, assessing, and predicting the impacts associated with releases of hazardous and petroleum chemicals to the local and regional human health and welfare. The State of Minnesota established the Professional Geoscientist (PG) rules during 1996 and 1997; the rule went into effect on August 4, 1997. Under the grandparenting rules the first license in Minnesota was issued on June 5, 1998. Minnesota established the National Association of State Board of Geologist (ASBOG) as the testing mechanism for the rule and the first exam was offered in 1997. Based on the lack of examinees in 1997, the first exams were administered in September 1999. As a result, several state agencies

associated with environmental and groundwater fields require reports to be reviewed and submitted by a professional geologist or soil scientist.