2.10 Hazardous Materials and Wastes

2.10.1 Key Issues

As industrial development in the PRB has increased, so too has the use of hazardous materials and the disposal of hazardous waste. Air, water, soil, and biological resources potentially could be affected by an accidental release or misuse of hazardous materials that could occur during transportation, storage, or use for various industrial activities.

2.10.2 Study Area

The baseline study area for hazardous materials includes all or portions of Sheridan, Johnson, Campbell, and Converse counties (see **Figure 1-1**). It includes all of the area administered by the BLM Buffalo Field Office, a portion of the area administered by the BLM Casper Field Office, and a portion of the TBNG, which is administered by the USFS. State and private lands also are included in the study area (see **Figure 1-3**).

2.10.3 Current Conditions

2.10.3.1 Regulatory Framework

"Hazardous materials" are defined in various ways under a number of regulatory programs. The term hazardous materials includes materials regulated by the statutes and regulatory programs listed below. Many of the hazardous materials or substances are regulated under more than one program.

- Substances covered under the Occupational Safety and Health Administration Hazard Communication Standard (29 CFR 1910.1200).

- “Hazardous materials" as defined under the U.S. Department of Transportation (USDOT) regulations at 49 CFR, Parts 170-177.

- “Hazardous substances” as defined by the Comprehensive Environmental Response, Compensation, and Liability Act and listed in 40 CFR Table 302.4.

- “Hazardous wastes” as defined in the Resource Conservation and Recovery Act (RCRA). Procedures in 40 CFR 262 are used to determine whether a waste is hazardous waste. RCRA regulations have specific definitions of what constitutes hazardous waste and how such wastes are managed and disposed.

- Any “hazardous substances” or "extremely hazardous substances," as well as petroleum products such as gasoline, diesel, or propane, that are subject to reporting requirements (Threshold Planning Quantities) under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act (SARA).

- Petroleum products defined as "oil" in the Oil Pollution Act of 1990. The types of materials subject to these requirements include fuels, lubricants, hydraulic oil, and transmission fluids.

In conjunction with the definitions noted above, the following lists provide information regarding management requirements during transportation, storage, and use of particular hazardous chemicals, substances, or materials:

- The SARA Title III List of Lists or the Consolidated List of Chemicals Subject to the Emergency Planning and Community Right-to-Know Act and Section 112(r) of the Clean Air Act.

- The USDOT listing of hazardous materials at 49 CFR 172.101.

Certain types of materials (e.g., used oil) while they may contain potentially hazardous constituents, are specifically exempted from regulation as “hazardous wastes.” WDEQ also has regulations concerning management of certain types of hazardous materials. Other wastes that otherwise might be classified as hazardous are managed as “universal wastes” and are exempt from hazardous waste regulation as long as those materials are handled in ways specifically defined by regulation. An example of a material that could be managed as a universal waste is lead-acid batteries. As long as lead-acid batteries are recycled appropriately, requirements for hazardous waste do not apply.

In most cases, the regulated materials consist of products and materials that are used and consumed during industrial activities. Examples of such materials could include cement, fuel, solvents, acids, and many of other chemicals and products. Often the hazardous constituents comprise a small percentage of the product being used, the rest of the material in the product being inert or not defined as hazardous under any of the programs listed above. If these materials are not consumed during ordinary use and are regarded as waste, and if a waste is determined to be a hazardous waste, it must be handled and disposed of according to strict rules under RCRA. The RCRA program in Wyoming is delegated to the Hazardous and Solid Waste Division of the WDEQ. If the material to be discarded is determined not to be a hazardous waste, the material must be disposed of or recycled in a manner according to the statutes and regulations.

2.10.3.2 Coal Mining and Other Mining Operations

The primary hazardous materials that are consumed during coal mine operations include petroleum fuels and lubricants. **Table 2.10-1** presents a generic list of potentially hazardous materials typically used in surface coal mining operations. The amounts of these materials would vary considerably from mine to mine based on production methods and overall output from the mine. The fuel used is primarily diesel for excavators, heavy equipment, and haul trucks. The fuels are stored at the various mines in tanks (whether aboveground or underground) that have release containment systems and spill contingency plans to handle leaks and larger spills.

In addition to storage of fuels and lubricants in stationary tanks, mobile tanker trucks are used to provide fuel for excavators, haul trucks, and other equipment. Portable tanks and drums also would be stored in a manner to prevent spills from reaching soils or water. Used oil would be recycled to a licensed used oil recycler during the life of the mine.

Table 2.10-1
Potentially Hazardous Materials Used in Typical Surface Coal Mining Operations

Material	
Diesel	Brake fluid
Gasoline	Grease
Explosives	Lead-acid batteries
Gear lubricant	Solvents (i.e., petroleum naptha)
Engine lubrication oil	Chlorine (for water supply treatment)
Hydraulic oil	Herbicides
Ethylene glycol (antifreeze)	Dewatering well treatment chemicals (i.e. hydrochloric acid)

Source: U.S. Army Corps of Engineers 2002.

During the operational lives of the mines, the probability of minor spills of materials such as fuel and lubricants would be relatively high. These releases could occur during fueling operations or from equipment failure (e.g., hydraulic hose failure). Spills of this nature would be localized, contained, and disposed of in accordance with the applicable laws and regulations. Accidents involving other hazardous materials also could occur during mine operation. Mine operations are required to develop and maintain a site-specific Spill Prevention, Control, and Countermeasure (SPCC) Plan to deal with unplanned releases of petroleum products. They also have Emergency Response Plans that establish procedures for responding to accidental spills or releases of hazardous materials to minimize health risks and environmental effects. The plans include procedures for evacuating personnel, maintaining safety, cleanup and neutralization activities, emergency contacts, internal and external notifications to regulatory authorities, and incident documentation. Proper implementation of the SPCC and Emergency Response plans has reduced the potential for major impacts associated with potential releases of hazardous materials.

Some of the materials listed above may become hazardous wastes (i.e., spent solvents). Materials that are considered hazardous must be accumulated, transported, and disposed of under very specific requirements. A review of the USEPA's Enforcement and Compliance History Online database indicates that the coal mines in the PRB do not generate large amounts of hazardous waste, and most of the mines are classified as Small Quantity Generators or Conditionally Exempt Small Quantity Generators.

2.10.3.3 Conventional Oil and Gas, Coal Bed Natural Gas, and Pipelines

Drilling operations for conventional oil and gas, and CBNG are very similar. Many of the potentially hazardous materials used in drilling the wells are the same. However, the amounts of material used for CBNG wells are somewhat less, because the wells generally are much shallower. The materials used in these industries include fuels, lubricants, additives, and explosives. **Table 2.10-2** lists the types of hazardous materials that could be used for drilling and completion operations.

In addition to materials used in the drilling of wells, there are materials that are used and consumed in the production operations of oil and natural gas wells. Some of the common materials are listed in **Table 2.10-3**. Some materials may be used exclusively for oil well operations and others used exclusively for gas wells and associated gas processing and compression.

Table 2.10-2
Potentially Hazardous Materials Used in Typical Oil and Gas Well Drilling and Completion Operations

Material	
Diesel	Engine lubricants
Gasoline	Biocides
Drilling fluid additives	Solvents
Caustics	Paint and thinners
Well completion and treatment fluid and additives	Pipe thread sealer
Silica sand	Explosives (for perforating)
Corrosion inhibitors	Compressed gases
Cement	Lead-acid batteries
Cement additives	Ethylene glycol
Hydraulic fluids	

Sources: BLM 2003a; USFS and BLM 2003.

Table 2.10-3
Potentially Hazardous Materials Used in Typical Oil and Gas Well Production Operations[1]

Material	
Well workover treatment chemicals	Methanol (line freezing prevention, gas wells)
Emulsion breakers (oil wells)	Water treatment chemicals
Corrosion inhibitors	Catalysts (natural gas processing, sulfur recovery)
Triethylene glycol (natural gas dehydration)	Caustics (gas treatment)
Biocides	Paint and thinners
Diesel	Lead-acid batteries
Gasoline	Herbicides
Amines (natural gas processing)	

[1]Includes field gas processing and gathering pipelines.

Source: Interstate Oil and Gas Compact Commission 1999.

Oil and gas well operators also must comply with requirements for the transportation, storage, use, and disposal of potentially hazardous materials. In addition, certain wastes derived from oil and gas drilling and production operations are exempt from regulation as hazardous wastes. Instead, these waste materials must be disposed of or recycled according to applicable rules and regulations either under the jurisdiction of WDEQ or WOGCC. Examples of wastes that are exempt include produced water, drilling mud and cuttings, and completion and workover fluids.

In addition to the potentially hazardous materials that would be used and generated during oil and gas drilling and production operations, the products derived there from are considered hazardous. Oil, condensate, natural gas liquids, and methane can be considered hazardous materials either because of their volatility or explosive nature. There are standards and regulations that apply as well to the storage and transportation of these products.

Natural gas pipelines also would use potentially hazardous materials. Materials typically used in the construction and operation of transportation pipelines includes fuels (diesel, gasoline, methane), lubricants, water treatment chemicals, ethylene glycol, propylene glycol, methanol, sand blast media, and acids.

2.10.4 Comparison to Previous Predictions

A review of previous NEPA documents (BLM 1979, 1981) and the Coal Development Status Check (BLM 1996) indicated that specific historical information is not available, nor were predictions made, concerning the transportation, storage, use, and disposition of hazardous materials (e.g., kind of materials, amounts used, spills and releases, and trends of consumption for the future) for coal mining.