United States
Environmental Protection
Agency

Region 8
Office of Public Awareness
1860 Lincoln Street
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EPA

Profile of Environmental Quality

Region 8
Colorado
Montana
North Dakota
South Dakota
Utah
Wyoming

Ten years ago, many of us witnessed the birth of the national movement to protect the environment. There were pioneering environmentalists before that, of course, but the national environmental protection movement can be said to have begun in earnest in 1970.

Few among us then had a clear understanding of the real scope of the problem or of the ultimate costs of reclaiming a *healthful*, if not pristine, environment. We found that there are hundreds of problems, each with its own cost in terms of environmental or human health effects and dollars... each capable of solution or management given the right mix of *regulation, technology, money* and *commitment* on the part of government, business and individual citizens.

Local and global shortages of fuels and other commodities have underscored the constantly growing interdependence of nations, regions and communities.

We have learned the lessons stressed by early environmentalists — "everything is connected to everything else and nothing is free."

We have learned that, just as the problems are the sum of actions of individuals, so are the solutions. Reclaiming lost environmental quality cannot be "we versus they." It is an issue of vital importance to us all.

This report describes some of the progress made since our first environmental quality report in 1978 and looks forward toward some of tomorrow's challenges. We invite you to join us in meeting those challenges.

Roger L. Williams
Regional Administrator

Contents

Ten Years Ago...

Caught up as we so often become in the pressing issues of the day, we sometimes forget how far we've come in the past ten years. Just reflect for a moment though...

Raw discharges of sewage and industrial wastes into our waterways were commonplace. Hundreds of such discharges were halted in the early 1970's, thousands more are now treated or otherwise controlled.

Air pollution controls on large industrial sources were usually minimal or non-existent. Of more than one thousand such sources in this six-state region, fewer than 70 are now out of compliance with pollution control limits, and most of them are on compliance schedules.

Auto emission controls were in their infancy and provided minimal reductions of exhaust pollution. Mileage, too, has improved during the period.

Open burning dumps were common. Most have now been closed or converted to sanitary landfills carefully operated to reduce their impact on the environment and on public health.

Some extremely dangerous pesticides, whose benefits could not compare to their hazard to health or the environment, have been removed from use. Others are carefully controlled and can be applied only by trained users.

Non-specific poisons, once widely used on public lands to control predators for stockmen whose herds grazed the land, were banned.

The testing, evaluation and protection of drinking water, historically handled well by some suppliers, was broadened so an increasingly mobile American public could be reasonably assured of the safety of its drinking water across the Nation.

Late in the decade, the program got underway to protect Americans from the growing threat of hazardous waste disposal. We became aware that our complex technology was producing ever-growing quantities of increasingly dangerous waste materials which, in many cases, were being carelessly discarded.

Another program places increased responsibilities on manufacturers of toxic chemicals to prove the safety of their new products before their introduction into commerce.

Solutions to the ultimate control of radioactive tailings piles (a legacy of past uranium mining and milling) came closer as agencies worked together to develop engineering solutions and acceptable public exposure standards for the twenty-odd piles in the region.

The EIS system for evaluating the long and short term impacts to the environment of projects or decisions undertaken by federal agencies or on public lands was firmly established and has undergone refinement and streamlining to make it more effective and less obstructive.

Congress and the states turned legislative attention to many related areas to protect people from hazards in the workplace and marketplace, to carefully control increased production of coal, to protect endangered species and historic treasures, wetlands and floodplains, oceans and the upper atmosphere.

To be fair, many environmental laws had their precedents in the 50's or 60's but to quote the President's Council on Environmental Quality, "What was different about legislative initiatives of the 70's was, first, they came in concert and second, by and large, they had teeth."

The 10th Annual Report of the Council on Environmental Quality also mentions that this country's Gross National Product increased approximately 30 percent during the 70's (about the same as during the 60's) but the increase in the gross amount of "conventional" air and water pollution appears to have been halted.

In short, we were holding our own with gains, in many instances, being offset by additional growth.

Midway through the decade and continuing up to the moment, many Americans began wondering about over-protection. Were we going too far? To many, it seemed, the cumulative effect of so many laws was more destructive than beneficial.

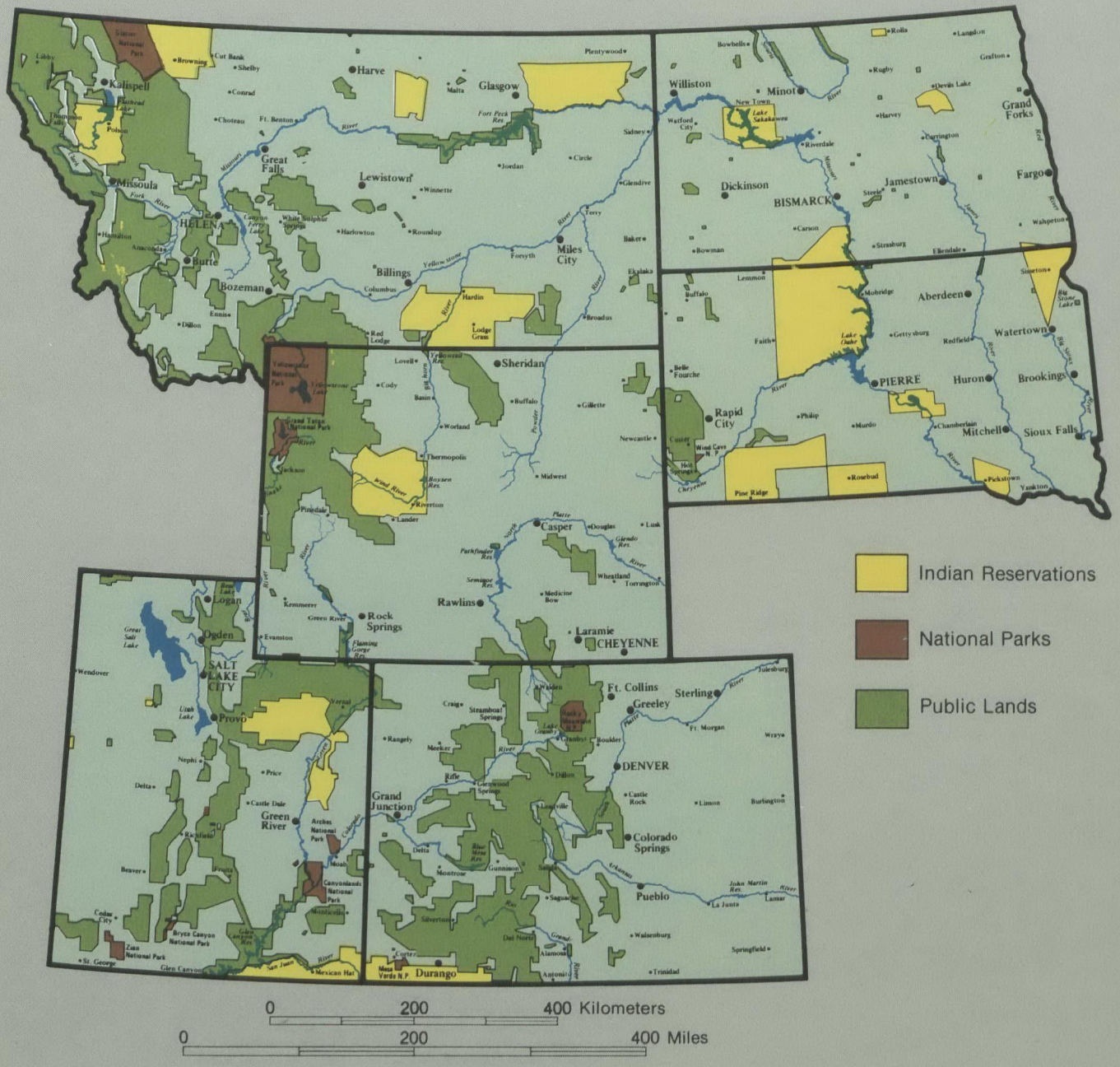
But taken individually, each serves an important purpose. Examined individually, the laws seem reasonable. They can be "opened up" from time to time for amendments. Most of the laws of the 70's have been amended, sharpened, improved. Few have been substantially weakened.

Standards in laws administered primarily by EPA are reviewed periodically in light of changing technology and scientific information, but have not been substantially weakened despite pressure from powerful quarters of society.

The laws of the 70's are standing the test of time. By and large, they are doing the job.

But probably more important than law, is the idea that an environmental ethic, widely heralded in the beginning of the decade, has moved quietly into the fabric of society... into households, corporate boardrooms, governmental chambers and libraries.

An EPA attorney, asked to reflect on the progress of environmental improvement programs, answered, "For every Colstrip (a major controversial power plant in Montana, provided finally with high-efficiency pollution controls to protect a clean air area) there are probably 20 permit applications that move smoothly through the process... not because they have received less scrutiny, but because they have met environmental requirements... because environmental requirements have become an integral part of the process of planning new facilities." The real progress of the 1970's may be just that kind of quiet change....


Indian Reservations
National Parks
Public Lands
0 200 400 Kilometers
0 200 400 Miles

Region 8

Region 8 of the Environmental Protection Agency (Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming) is big... and beautiful. Within this region can be found magnificent scenery — high jagged mountains, deserts, improbable rock formations, fertile plains, grasslands, and prairies, dark green forests, tumbling streams — and still some wide open spaces, still some quiet, untouched wilderness.

But this region has not escaped the damage caused by manmade pollution. Environmental problems do exist. Some of them are major. For instance, mountain air, which has 18 percent less oxygen at Denver's elevation than air at sea level, is polluted more easily. Though relatively few people live in the area, smog can result when they cluster in cities like Denver, Colorado Springs, Pueblo and Salt Lake City. A brand-new, perfectly tuned automobile puts twice as much carbon monoxide into the air in Denver as it does in Detroit.

Beneath the surface of the six states in the region lie 50 percent of the nation's coal reserves, most of its commercially feasible oil shale, and 40 percent of its economically recoverable uranium. Intense activity to extract these energy-rich fuels may create boom-towns with many kinds of pollution problems.

Our dry climate is a major contributor to air and water pollution. Seven major river systems have their beginning here and continue on to supply water to other regions, but their flow is relatively small and the water they carry must be reused many times. Small streams are particularly vulnerable to pollution, even in slight amounts. The lack of moisture in our region helps produce "fugitive dust," consisting of loose dirt and sand blown into the atmosphere by drying winds.

Cleaning up past pollution and trying to control its spread are both expensive and Region 8's small population means that the tax base is also small.

The EPA does not work alone to protect our environment. Instead its many programs are administered with other organizations at a variety of levels. In Region 8, these include state and municipal governments, regional councils, hundreds of special districts, private industry, citizen groups, individuals, and the 23 federally recognized Indian reservations located within the region's borders. These programs provide grants, technical assistance, study and monitoring.

Environmental Programs

Laws for Which EPA has Primary Responsibility	Major Provisions
Clean Air Act 1977*	...Sets national air quality standards ...Requires State Implementation Plans (SIPs) to ensure compliance with standards ...Sets vehicle emission standards ...Sets performance standards for new or modified stationary sources of air pollution ...Protects areas already cleaner than required by national standards ...Requires cleanup of areas not meeting standards ...Requires maintenance of air quality in areas where standards are already met ...Limits emissions of very hazardous pollutants ...Funds parts of State air pollution control programs
Federal Water Pollution Control (Clean Water Act) 1977	...Prohibits discharge of any pollutant into navigable waters without a permit ...Provides water quality criteria ...Sets standards for point source discharge ...Prohibits dumping of radioactive waste into the nation's waters ...Sets pre-treatment standards for wastewater treatment plants ...Requires states to adopt water quality standards that meet or exceed national water quality standards ...Funds 75 percent of construction costs for municipal sewage treatment systems ...Funds parts of State water pollution control act
Safe Drinking Water Act 1974	...Sets minimum national drinking water quality standards ...Authorizes research on health aspects of drinking water ...Protects drinking water from contamination associated with injection of wastes ...Assures adequate supplies of chemicals needed to treat public water systems ...Establishes National Drinking Water Advisory Council ...Allows designation of aquifers as sole or principal source of drinking water — environmental analysis required on federally funded projects in designated area ...Funds parts of State drinking water programs
Noise and Quiet Community Acts 1972 and 1978	...Sets acceptable levels for products that are sources of noise (construction equipment, transportation equipment, except aircraft, all motors, and engines and electric equipment ...Requires labeling of products as to their noise characteristics. Encourages development of low-noise emission products ...Sets noise emission standards for the railroad industry ...Demonstrates approaches to reducing noise
Federal Insecticide, Fungicide, and Rodenticide Act 1972*	...Requires premarket clearance of pesticides to prevent unreasonable hazard to humans or the environment ...Requires classification of pesticides for general or restricted use ...Provides for certification of users of restricted use pesticides ...Requires informative and accurate labeling of pesticides ...Specifies tolerance levels for certain pesticides

*as most recently amended

Laws for Which EPA has Primary Responsibility	Major Provisions
Resource Conservation and Recovery Act 1980*	...Gives guidelines to protect the quality of ground water, surface water and the ambient air from contamination by solid waste ...Encourages conservation and recycling by commercial establishments and municipalities ...Helps carry out solid waste management programs ...Sets standards for handling of hazardous waste from its generation through transportation to final disposal or treatment ...Protects underground water sources from pollution associated with disposal of hazardous waste
Toxic Substances Control Act 1976	...Authorizes EPA to obtain data from industry on production, use and health effects of chemical substances and mixtures (does not include drugs, food additives, pesticides, tobacco, or radioactive materials) ...Requires testing of potentially harmful chemicals ...Regulates the manufacture, processing, use and disposal of a chemical substance or mixture ...Bans manufacture, processing and distribution of products containing polychlorinated biphenyls (PCB's) ...Restricts use of some aerosol propellants ...Established Interagency Testing Committee which makes recommendations to EPA on testing substances

Laws in which EPA has a Supporting Role	Major Provisions
National Environmental Policy Act 1970	..."Encourages productive and enjoyable harmony between man and his environment" ...Requires environmental impact analysis (EIS) for any project that directly or indirectly affects the human environment and uses federal money, federal land leasing or requires a federal permit for operation ...Created the Council on Environmental Quality. CEQ or the President may make the final decision when conflict exists between federal agencies regarding project impacts
Marine Protection, Research and Sanctuaries Act (Ocean Dumping Act) 1972	...Prevents or limits ocean dumping of any material that would adversely affect human health, welfare or marine environment ...Requires permit system to control dumping in oceans ...Mandates research in pollution, overfishing and other man-induced ecological effects ...Gives authority to designate areas as marine sanctuaries
Endangered Species Act 1973	...Requires protection of the "critical habitat" of an endangered species in any project with federal involvement ...Requires that each federal agency use its authority to save endangered species
Atomic Energy Act 1954	...Provides overall guidance to other federal agencies on radiation protection matters which could affect public health ...Sets "generally applicable environmental standards" outside boundary of nuclear facilities

Indian Programs

Laws in Which EPA has a Supporting Role	Major Provisions
Surface Mining Control and Reclamation Act of 1977	...Sets standards to control disturbances of the land from coal mining ...Assures reclamation after mining ...Prohibits mining where reclamation is not feasible ...Sets performance standards to protect public health, safety and the environment
Occupational Safety and Health Act 1970	...Assures safe and healthful working conditions ...Requires employee health records be kept ...Sets contamination exposure limits and maximum contamination levels for workplace air
Energy Supply and Environmental Coordination Act 1974	...Enables federal government to order existing oil- gas-fired facilities to convert to coal ...Requires that all new power plants be coal fired ...Sets specific time table for meeting State Implementation Plan for converted plants
Uranium Mill Tailings Radiation Control Act 1978	...Sets cleanup standards for uranium mill tailings from inactive processing sites ...Sets general standards for protection of environment outside boundaries of tailing disposal sites ...Sets standards for final clean-up and disposal of mill tailings from active sites ...Investigates health hazards associated with current and past uranium operations. Funds 90 percent of tailings cleanup

Federal environmental statutes apply to Indian reservations and to Indian people as they do to other lands, other people. The Indian reservations within Region 8 cover nearly 30,000 square miles of land. These lands vary from high mountainous terrain to lush rolling grasslands to dry desert lands.

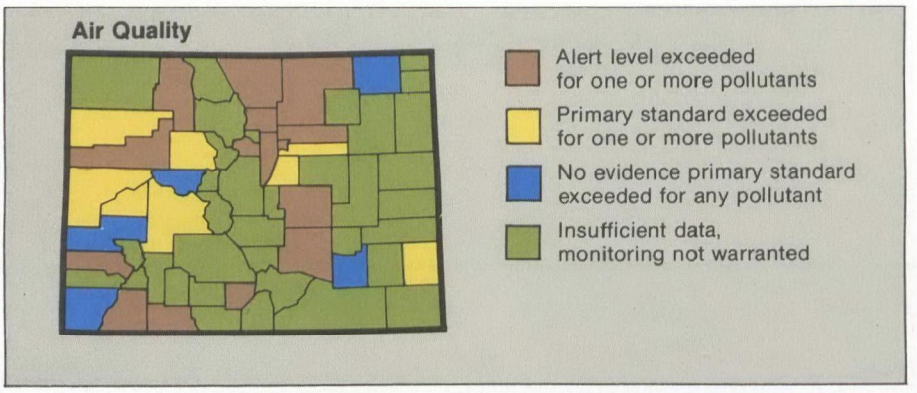
Many tribes are governed by elected, federally recognized tribal governments. Both state and federal courts recognize tribal governments as quasi-sovereign and distinct from states. The protection of reservation environments requires the cooperation of many governments: federal, state, tribal and local.

The accompanying chart shows the Indian reservations, their size, population, and the EPA programs the tribes have begun to participate in (indicated by an X) or where tribes have shown interest (shown by O).

Indian Reservations in Region 8

State Reservation	Tribes	Land Area (in Acres)	Total Population	PROGRAMS			
				Air	Water Quality Management	Pesticides	Solid Waste
Colorado							
Southern Ute	Southern Ute	307,110	2,310	O	X		X
Ute Mountain	Ute Mountain Ute	474,760	1,510	O	O		
Montana							
Blackfeet	Blackfeet	950,640	6,220	O	X	O	X
Crow	Crow	1,554,250	4,210	O	X	O	
Flathead	Confederated Salish and Kootenai	1,243,970	5,000	X	X		
Fort Belknap	Gros Ventre and Assiniboine	616,050	2,000		X		
Fort Peck	Assiniboine & Sioux	1,964,870	6,000	X	X	O	
Northern Cheyenne	Northern Cheyenne	433,590	2,680	X	X	O	X
Rocky Boy	Chippewa-Cree	107,610	1,500		X	O	
North Dakota							
Fort Berthold	Hidatsa, Mandan & Arikara	980,500	5,000		X	O	X
Fort Totten	Devils' Lake Sioux	244,510	2,500			O	X
Standing Rock	Standing Rock Sioux	847,800	4,690		X		X
Turtle Mountain	Chippewa	70,240	10,000		X		X
South Dakota							
Cheyenne River	Cheyenne River Sioux	1,419,500	4,310		X	X	
Crow Creek	Crow Creek Sioux	122,530	1,230		X	X	
Flandreau	Flandreau Sioux	2,180	270	X			
Lower Brule	Lower Brule Sioux	119,940	700		X	X	X
Pine Ridge	Oglala Sioux	2,778,710	11,350	O	X	X	
Rosebud Sioux	Rosebud Sioux	978,230	8,000		X	X	X
Lake Traverse	Sisseton-Wahpeton Sioux	106,210	5,000				
Yankton	Yankton Sioux	434,930	3,000	O	X		
Utah							
Uintah & Ouray	Uintah & Ouray Ute	1,008,150	5,000		X		
Navajo	(Utah portion) Navajo	1,194,530	4,930	O	X	O	
Ute Mountain (Utah portion)	Ute Mountain Ute	13,000	250	O			
Goshute (Utah portion)	Goshute, Bannock & Paiute	37,523	157				
Skull Valley	Goshute	17,440	60				
Wyoming							
Wind River	Shoshone & Arapaho	1,886,500	10,000	O	X		X

Colorado



Air Quality
The quality and clarity of air in Colorado is a prized resource, and the State has been a mecca for people with respiratory ailments. Much of Colorado's air is clean, but the rapid growth of population, motor vehicles, and industries has brought some severe, localized air pollution problems.

Air pollution in Colorado comes from the combustion of coal, oil, gas and wood in power generation, industrial sources, space heating and cooling, and a host of miscellaneous sources. Dust comes from construction, agriculture, mining, unpaved roads, and other sources. In urban areas, motor vehicles are the prime source of toxic gases and particles.

Five areas currently violate National health standards for air quality:

Colorado Springs area — *carbon monoxide and particulates*
Denver area — *carbon monoxide, hydrocarbons, ozone, nitrogen dioxide and particulates*
Grand Junction area — *particulates and lead*
Larimer and Weld counties — *carbon monoxide, ozone and particulates*
Pueblo area — *particulates*

In the Denver area, motor vehicles account for 93 percent of the carbon monoxide, 85 percent of the hydrocarbon emissions, about one-third of the nitrogen oxides (hydrocarbons and nitrogen oxides react in sunlight to form ozone), and 75 percent of the particulates (including both tailpipe emissions and particles stirred up by vehicle movement).

The Colorado legislature has enacted a law requiring inspection and some maintenance of vehicles, aimed at reducing automobile emissions to the levels at which the pollution control equipment is designed to operate. This law will apply to the urbanized areas along the Front Range of Colorado.

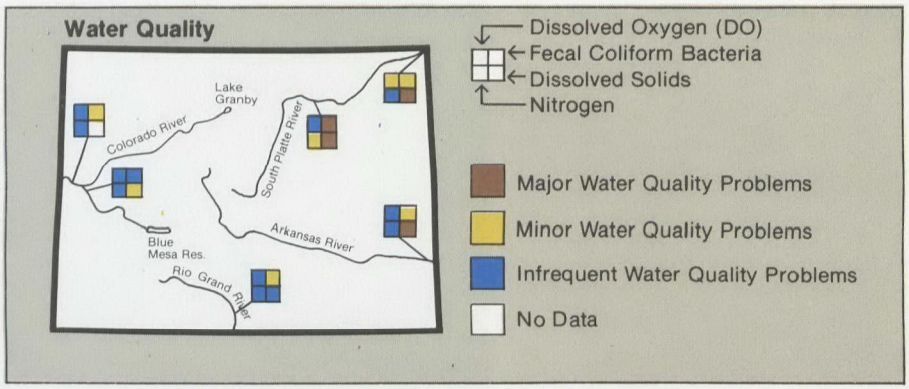
Other measures for air quality improvement include transportation controls, improvements of public transportation, and strategies aimed at encouraging alternative transportation such as car pools, van pools, and increased bicycle use. Improvements anticipated for the future are EPA requirements for reducing emissions from vehicles to be used at higher altitudes (such as Denver, where cars made for sea level use pollute about twice as much), use of alternative fuels such as gasohol and possibly hydrogen or natural gas, light-rail commuting service and electric cars.

These programs and strategies are aimed at attaining National health standards by 1987.

Water Quality
Water quality in Colorado is influenced by natural geologic features, and by land and water uses within the State. The most common violations of water quality standards within the mountainous areas of the State are due to the presence of metals, particularly lead, copper, zinc, iron, cadmium, and manganese. Lead, copper, and cadmium pollution is frequently found in short stream segments near inactive or abandoned mining areas.

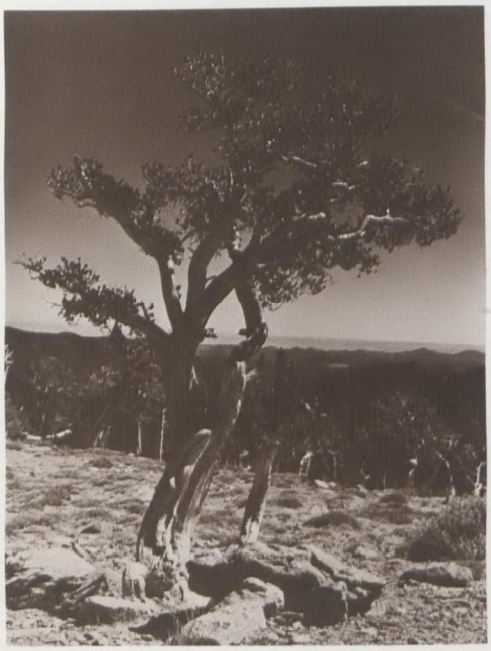
Salinity (the level of total dissolved minerals) is of concern in the Colorado River system, in the Arkansas River, and, to a lesser degree, in the South Platte River. Salinity seriously affects water quality and water uses in the Arkansas River between La Junta and the Colorado/Kansas border. Although salinity has little effect on the quality and use of water from the Colorado River and its tributaries in Colorado itself, the Colorado portion of the seven-state Colorado River basin is a source of salts for the rest of the river system. Salts originate from both natural and man-made sources.

Colorado



Problems with other water quality standards in Colorado are usually associated with wastewater discharges from cities and towns and runoff from agricultural activities and urban areas. Water pollution from these sources includes high levels of ammonia, which affects aquatic life in the Front Range and in the major mountain valleys, and levels of fecal coliform bacteria.

Major violations of bacteria standards for "secondary contact recreation" (boating, fishing, etc.) occur in many streams, primarily along the Front Range and in the lower Platte and Arkansas Rivers. High nutrient levels (nitrates and phosphates) also occur along the Front Range and lower Platte and Arkansas Rivers and endanger the quality of some of the reservoirs and lakes of the mountain region.



Major municipal wastewater facilities in Colorado are located primarily within the Front Range urban corridor from Pueblo to Fort Collins. Industries located within this urban corridor are required to pretreat their wastewater before sending it to a municipal facility for final treatment and discharge. Water quality problems have been encountered within areas served by major municipal facilities, even though these facilities are generally among the best in the state. During the period 1973-1980, EPA provided nearly $225 million to the State to help build municipal sewage plants. This allotment, under the authority of the Clean Water Act, provided 75 percent of the costs of building these plants.

Agricultural activities, including feedlots, cause problems that cannot be handled by centralized treatment facilities. The principal pollutants reaching Colorado's streams from these activities include salts, sediments, and nitrates (from fertilizers). Mining activities result in stream accumulations of metal compounds and sediments. Rain and melting snow in urban areas carry sediments, oxygen-demanding substances, and bacteria to receiving streams. Use of flood retention devices and low-lying lands to intercept these waters helps through natural filtration and treatment.

Drinking Water

The quality of treated drinking water supplies in Colorado, while generally good, faces an endemic problem from the presence of Giardia Lamblia in surface waters throughout the State. Giardia Lamblia is a protozoan resistant to chemical disinfection and causes a gastro-intestinal disease in humans. Colorado suffers from several outbreaks of Giardia-related disease annually.

Another source of drinking water problems is the widespread presence of naturally occurring radioactive elements in potable water supply sources. The removal of both Giardia and radioactive elements requires the installation and proper operation of sophisticated filtration systems in addition to more "conventional" water treatment facilities. Sixteen communities in Colorado still use surface drinking water supplies without filtration, and a similar number need improved treatment units or additional treatment capacity to reliably meet drinking water standards.

Colorado

Solid and Hazardous Waste
Hazardous wastes include flammable, corrosive, toxic, and infectious materials. The amount of hazardous wastes generated in Colorado is estimated at some 1000 tons per day. In 1977, over 9.7 million gallons of hazardous wastes, primarily from industrial activities, were delivered to Denver's Lowry Landfill disposal site, a principal disposal site for such wastes in Colorado. Hazardous wastes disposed of at other disposal sites or at industrial sites are being surveyed. A very small percentage of hazardous waste generated in Colorado is shipped out of state for disposal.

Most of the sources of hazardous wastes in Colorado are located along the Front Range between Pueblo and Fort Collins, with most being centered in the Denver metropolitan area. Standards and regulatory controls are being instituted for the production, transportation, storage, and disposal of hazardous waste materials.

The principal hazardous waste-generating industries in Colorado are: 1) chemicals and allied products, 2) metal refineries and producers, 3) metal products fabrication (including electroplating), 4) petroleum refining and related activities, 5) rubber and plastics products manufacturing, and 6) mining activities.

In addition to the environmental and public health problems presented by the disposal of hazardous and toxic wastes, the disposal of what is referred to as "solid wastes," or garbage, sewage sludge, etc., also presents problems. The burial of solid wastes can present a high potential for chemical and bacteriological pollution of ground and surface water, particularly when certain geological conditions are present. However, proper site selection, combined with good design and operation of the sanitary landfill, can normally eliminate the possibility of either surface or groundwater pollution. Another problem with landfills is the generation of explosive methane gas as the wastes decompose. Again, good design and operating practices can minimize the potential dangers of gas explosions. In fact, the future may see development of this "waste gas" as fuel.

There are 201 solid waste disposal sites in Colorado, 53 of which serve from 5000 to 200,000 people per site. Sixty-one percent of the small disposal sites were in compliance with state and federal requirements at their last inspection, while only 36 percent of the large sites complied with regulations.

Increasing amounts of solid and semi-solid wastes (called sludge) are being removed in the treatment of sewage. An estimated 150 landfill sites are being used for the disposal of sewage sludges. These sludges can create serious operation problems for landfills, including the generation of methane gas.

Other waste disposal problems include the disposal of industrial sludges, and the existence of abandoned or closed disposal sites. These latter sites are frequently built on, and include shopping centers, schools, and residential buildings. They must be carefully monitored to prevent dangerous concentrations of explosive gases, and pollution of groundwaters.

Colorado

Toxic Substances
Pesticides benefit the agricultural community and the general public by increasing the quality and quantity of crops, protecting public health, and helping maintain aesthetic qualities in urban environments. However, pesticides, if misused, may create problems such as human poisonings and contamination of livestock and human water supplies.

While generally beneficial, the use of pesticides frequently causes disagreements among interest groups. Examples include mosquito abatement programs versus agriculture/wildlife interests and beekeepers versus insect control programs. Another example involves conflicts between farmers using pesticides and new homeowners who have purchased lots adjacent to agricultural lands. These conflicts are often heightened because of the limited alternatives available to address certain types of pests. For example, the limited alternatives available to livestock producers to control predators has resulted in many cases of illegal use of predator poisons.

Each environmental program (i.e., air, water, solid waste, toxics) has its own unique problems in Colorado which involve the control of toxic substances. However, control alternatives often affect one or more of the other media and require a coordinated multi-media approach.

There are still many transformers and capacitors in Colorado which contain PCBs as coolants. Past practices regarding PCB oil have left contamination in the soil and waterways. The material is a suspected carcinogen and the levels of concentration at which various environmental impacts occur is unknown.

Sprayed asbestos insulation on ceilings has been found in several Colorado schools, and many more instances will become known upon a more complete sampling. Asbestos, when inhaled, is a known carcinogen and efforts must be made to locate all occurrences of sprayed asbestos which is releasing fibers to the air.

Radiation
Radiation presents an environmental health issue of particular concern in Colorado, due to naturally occurring radioactive uranium and radium deposits and to mining and industrial activities involving radioactive materials.

Colorado has 3000 active and inactive uranium "pits" and several major uranium processing mills. There is also a large legacy from the past involving radium mining and processing in the early 1900's. Durango, Grand Junction, Rifle, Gunnison, Naturita, Slick Rock, and Maybell all have inactive uranium tailings piles, a problem which has been severely compounded in Grand Junction by the widespread use of tailings in construction of buildings for homes, stores, etc., in the 1940's, 50's, and 60's. Tailings from turn-of-the-century radium processing facilities in Denver and Grand Junction also pose problems, especially since many of the early processing sites have been converted to other uses over the past 60 years without any clean-up of the radioactive residue.

The possible public health danger of low-level radioactivity from uranium and radium tailings has been recognized only in recent years. Indeed, the very presence of radium tailings in Denver and Grand Junction was all but forgotten until they were "rediscovered" in 1979. Where old tailing piles exist, and especially in cases where tailings have been used in construction or old sites have been converted to other uses, the problem is not only one of prevention of possible human exposure to radiation, but of belatedly cleaning-up these significant potential sources of radiation exposure.

Colorado

Other key concerns with protection of the public from radiation in Colorado involve radioactive elements in water supplies from ongoing uranium mining activities, such as the contamination of the North Table Mountain water supply system in the Denver metropolitan area, with the Arkansas River and in other river basins in the state, due in large part to uranium mining and milling activities. Naturally occurring uranium in streams feeding public water supplies, is also of concern since, in some cases, natural levels of in-stream radioactivity far exceed proposed drinking water standards. Unfortunately, no drinking water standard for radiological toxicity currently exists, nor is there at present any good basis to define such a standard.

Finally, the presence of the Fort Saint Vrain nuclear powerplant at Platteville, just north of Denver, and of the Rocky Flats Plant, on the northwest fringe of the metropolitan area, require constant vigilance by both the plants' operators and state and federal regulatory agencies to minimize the possibility of accidental releases of radioactive gases and elements into the environment. Effective, up-to-date emergency response plans must be maintained for both facilities to protect the public from exposure to radiation should accidental radioactive releases occur.

Noise

Noise problems in Colorado are becoming increasingly serious and complex. Rapid growth and development along the Front Range are causing greater numbers of citizens to be exposed to high levels of urban noise. In response, many communities are becoming actively concerned with motor vehicle and other community noise problems. The paramount noise problem, however, is probably that associated with commercial airports. Denver's Stapleton International Airport is the source of particularly serious noise problems.

On the Western Slope, energy development is bringing noise from construction, mining, fuel transportation, and motor vehicles to previously quiet rural areas and small towns. One such town, Craig, has begun to feel the full impacts of increased noise as energy projects are developed.

Pristine scenic, historic and recreation areas will require protection from the noise impacts of transportation and energy development. Also, as people are increasingly exposed to excessive noise, they will become more insistent that noise in their communities be quieted. Local governments will thus likely become more aware of noise as a problem which they will need to overcome.

MAJOR FEATURES OF COLORADO'S INSPECTION/ MAINTENANCE PROGRAM

Covers: 1968 and later cars and light trucks in Denver, Boulder, Colorado Springs, Fort Collins and Greeley metropolitan areas.

Begins: as a voluntary program and with vehicles undergoing ownership change, July 1, 1981.
Full implementation, all vehicles, Jan. 1, 1982.

Inspection: once annually with exhaust gas analyzers at licensed inspection stations (similar to existing safety inspection program).

Pass/Fail: standards set so 60 percent of 1968-1974 and 70 percent of 1975 and later vehicles will pass emission test and owners receive certificate of compliance.

Failed Vehicles: 1968-1980 model years will be adjusted to manufacturer specifications, retested and issued certificate of compliance if they pass, certificate of test if they fail. No further repair required. "Gross" polluters are expected to be very small portion of vehicle population and will be off the road from natural attrition soon.

In 1980-later model years, needed repairs up to maximum of $100 will be required.

Any vehicle without required emission controls as originally installed by manufacturer will fail and will not receive certificate.

Referee: stations operated by State will be consumer protection feature.

Colorado

Montana

Air Quality
The Big Sky Country is truly what its name implies, yet there are places where the quality of air is a fragile resource. The plains east of the Rocky Mountains provide few obstructions to the sea of air that flows across the land, but in western, southern and central Montana, where various mountain ranges form valleys, air sometimes is trapped in layered inversions.

In urban areas throughout the state, street dust, smoke from fireplaces and industrial emissions contribute to lowering air quality and visibility. In rural areas the largest contributors to air quality degradation are unpaved roads and mining operations.

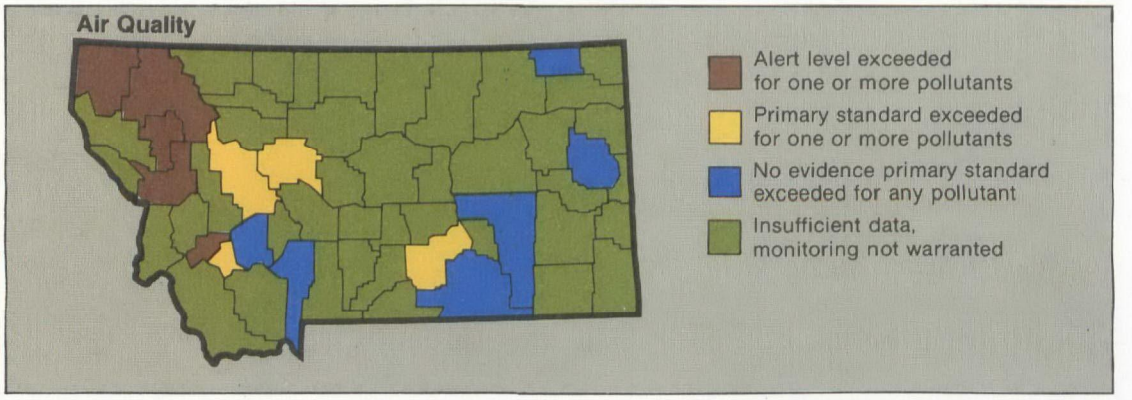
Problems involving violations of National health standards for sulfur dioxide exist in the East Helena and Anaconda areas, from smelter emissions, and in the Laurel area from oil refining. Violations of air standards for lead, also due to smelter emissions, occur in the East Helena and Anaconda areas. Carbon monoxide from motor vehicle emissions causes violations in Great Falls, Missoula and Billings. Standards for particulates are violated in a number of areas, especially in the western part of the state, from street dust, fireplaces, mining and other forms of industry. All of Montana meets National standards for photochemical oxidants (ozone) and nitrogen oxides.

Water Quality
Montana has some of the highest quality water in the United States, and many streams are pure enough to support excellent fisheries. The state is not without water quality problems. About 30 percent of the stream mileage is being degraded, largely by "non-point" source pollution and as a result of irrigation withdrawal.

Non-point source problems are by far the most prevalent. Activities associated with agriculture, mining, urban development and forestry are the most significant contributors. Of these activities agriculture, by virtue of its geographic extent, is the most prevalent.

The most common water quality problem in Montana is the presence of clays and other mineral sediments in streams. According to a State study, 364 stream segments are experiencing sediment increases at some point due to channel alteration and overuse by livestock.

Although logging of federally and corporately owned forests does degrade surface water, these operations are usually managed with the intent of reducing adverse environmental impacts. A major portion of Montana's forests, about 3.1 million acres, are owned by private non-corporate land holders. Without strong forestry management programs, future harvests could result in substantial water quality degradation.



Drinking Water

The initial Montana law relating to public water supplies was enacted in 1907. This law was revised in 1977 and again in 1979 to enable Montana to administer the Federal Safe Drinking Water Act. Montana's program covered about 250 community water systems prior to 1978. The current inventory lists 609 community water systems and 1,147 non-community water systems. About 87 percent of these systems serve fewer than 1000 persons. Ten percent of all community systems use surface waters, and these systems supply water to 70 percent of the population.

From a quality standpoint, Montana's drinking water is considered generally good in the western part, except for some surface supplies which are high in turbidity because of mineral sediment in these waters. In the eastern part of the state, communities using surface supplies, with few exceptions, have water treatment facilities capable of providing quality water. However, the groundwater supplies are generally high in total dissolved solids. Some of the smaller supplies have fluorides and nitrates which exceed the healthful limits.

Nearly all of the community public water supplies are now regularly monitoring for bacteriological contamination, and set levels for coliform bacteria are rarely exceeded. Of 576 community supplies, only about 15 have not yet begun a regular bacteriological monitoring program.

A program for radiological monitoring is being developed and will be implemented over the next 1-2 years. This program is planned to include all community supplies.

Point source pollution is controlled through a system of discharge permits. Of 15 major industrial discharges, 10 are substantially in compliance with standards or are on schedule to meet those standards. Of 190 minor industrial discharges, only one is not in compliance. Discharges from about one-half of Montana's municipal sewage plants comply, the rest need new facilities or operational improvements. Under the Clean Water Act, EPA has provided nearly $90 million to the State for construction of municipal sewage treatment facilities during the period 1973-1980. Under this law, EPA funds 75 percent of the cost of these plants, the balance coming from local and/or State funds.

The State expects a considerable number of water discharge permit applications from new energy development operations, most of which would have some effects on high quality water. Careful attention to these developments will be necessary to avoid pollution of these waters.

Solid and Hazardous Waste

Disposal of solid wastes has become a major, complex problem in Montana, involving air, water and land pollution. In the future, the solid waste problem will become more extensive and costly to control. Concerted efforts at all levels of government, as well as the private sector, must be employed to ensure proper waste management.

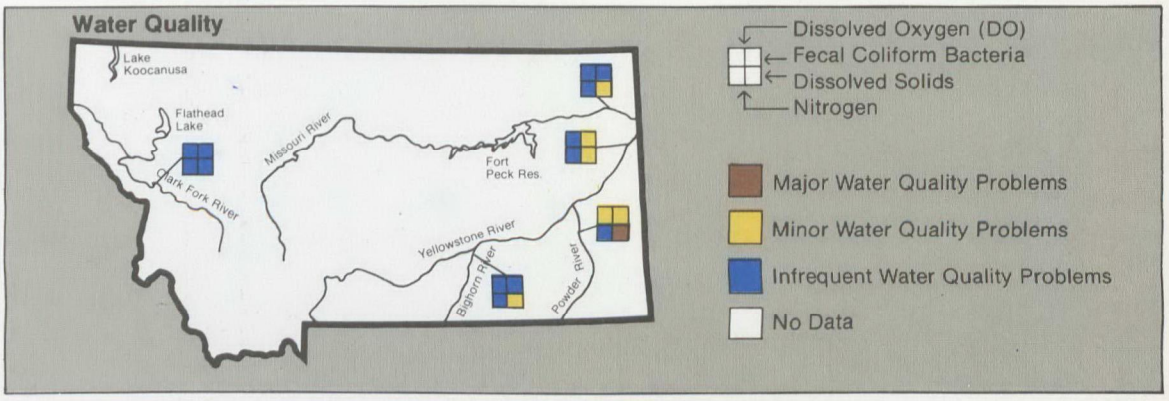
Currently, some 600,000 tons of municipal solid waste are generated each year in Montana. By 1990 nearly 870,000 tons of waste will be generated yearly. This waste is being disposed of in more than 250 identified municipal disposal facilities and numerous indiscriminate dump sites.

Approximately 200,000 tons of potentially hazardous wastes are generated each year in Montana. This volume of hazardous waste includes pesticides, heavy metals and other industrial chemical wastes. Furthermore, a large number of "empty" pesticide and other toxic chemical containers are discarded annually.

The State is providing both technical and financial assistance to local government entities for the development of waste management systems.

Legislative amendments enacted in 1977 give the State control over hazardous waste transporters. Also in 1977 the State published a survey of hazardous waste generation, storage, treatment and disposal practices. This survey included 236 industries as well as other generators of hazardous waste, such as hospitals, pesticide users and septic tank service companies.

Montana



Currently, no licensed hazardous waste disposal facility is located in Montana. This situation does not pose an immediate problem because of the availability of sites in neighboring states. However, the difficult task of siting a hazardous waste disposal facility may have to be faced in Montana.

Alternatives for collection, storage and disposal of small quantities of hazardous wastes from laboratories, retail establishments, pesticide users and small industrial generators may be necessary to ease the burden of hazardous waste disposal in sanitary landfills and to prevent illegal hazardous waste disposal.

Toxic Substances

Montana is primarily an agricultural state and needs pesticides to help manage pest problems. Commercial applicators estimate that about three million acres are treated commercially each year. Private applicators treat smaller acreages, do spot treating, and field margin treating, and apply pesticides to about two million acres.

The Montana Department of Agriculture has a responsibility to serve Montana's agriculture, but is also mandated to protect the environment and the health of the state's citizens. To do this, the use of pesticides is closely monitored through a pesticide applicator certification program and an enforcement program.

Since their inception, the programs have significantly reduced the amount of pesticide contamination in Montana despite the fact that the number of certified commercial and private applicators has increased significantly.

Pesticide problems remain, however. Several fish kills led to regulations restricting the use of aquatic herbicides. Damage occurs from drift of pesticides sprayed by air. Test plots have been established in the state to provide baseline information on pesticide levels in the soil.

After the discovery that many schools throughout the state contain asbestos building materials, the EPA sent each school information on how to collect samples and how to take remedial steps to reduce the danger from sprayed asbestos materials. The EPA will continue assisting schools in getting samples tested and coordinating technical assistance.

An incident of accidental contamination by polychlorinated biphenyls (PCB's) at the Pierce Packing Plant in Billings received national attention in 1979, highlighting the need for careful control of this highly toxic chemical.

Radiation

Elevated levels of radioactivity are being studied in two parts of Montana by state and federal agencies. The State has been studying elevated radioactivity in water wells and geothermal springs in the Alhambra area since the problem was discovered in 1979.

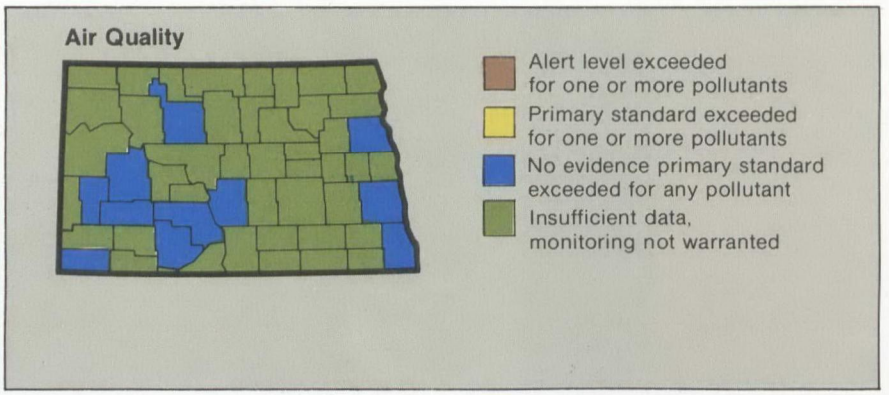
The State and EPA have been investigating the radiation levels in Butte for more than two years. Although studies are still in progress, it appears the elevated radiation levels are due to a unique combination of natural and displaced radioactive materials. Naturally occurring radon gas is released through cracks and outcrops in the earth.

Noise

Although Montana is not facing severe noise problems, there is a growing interest in assessing the problem, and in preventing future problems from energy development and uncontrolled growth. The State has asked for an EPA grant for noise assessment and an educational program to help develop corrective measures at the community level.

Montana

North Dakota



Air Quality

The quality of air in North Dakota is better than that required under both State and EPA standards which are designed to protect human health and general welfare. There are 93 major sources of air pollution in North Dakota. (Sources producing 100 tons or more of pollutants each year). Only three of these are violating regulations and standards, and all are under schedule to come into compliance.

The major air quality challenge for the near future will be to control emissions in the western part of North Dakota where energy development is causing significant increases in the concentrations of air pollutants. Control of particulate and sulfur dioxide emissions from these facilities will protect not only the air throughout the region, but also the especially clean air of the Theodore Roosevelt National Memorial Park and the Lostwood Wilderness Area. As long as new facilities are properly located, and adequate air pollution controls installed, both public health and opportunities for growth will be protected.

Water Quality

Because North Dakota is a semi-arid state, both the quantity and quality of its water are of environmental concern. Except on the Missouri mainstem, the dry climate results in relatively low stream flows with most of the minor streams considered intermittent for most of the year. The evaluation of surface water quality in the state must therefore include stream flow as a major factor. Low sluggish flows during the warm summer months, and low flows during winter months (under ice and snow cover which inhibit aeration and sunlight penetration) are common conditions encountered in many of North Dakota's surface waters. The resulting decrease in "natural" treatment, coupled with the lack of dilution of low flow rates, tends to elevate pollutant levels.

A gradual improvement in water quality can be directly related to successful gains in the control of both municipal and industrial waste discharges over the past years. There are 15 major municipal and 25 major industrial and other dischargers in the state, and a total of 338 minor dischargers, all under public control through a permit system.

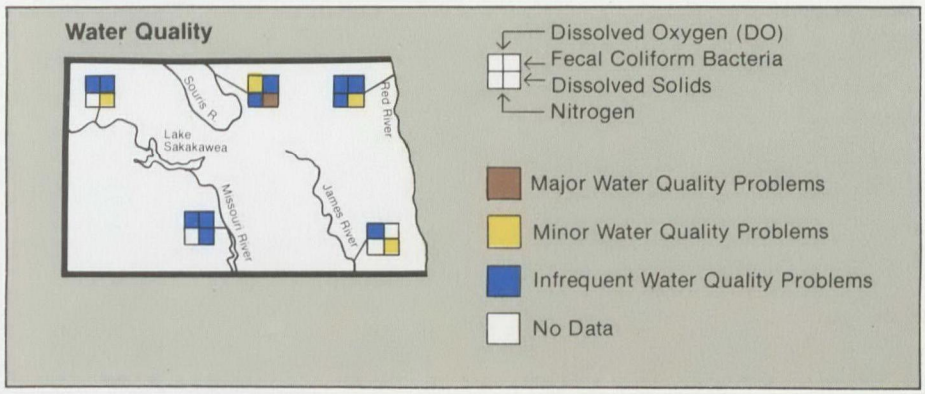
Non-point pollution sources are presently considered the major cause of pollution of surface waters, from nutrients and sediments. Phosphates and nitrates stimulate the production of algae in the slow-moving streams in the state, affecting beneficial uses of the waters. Non-point pollution control programs now underway should show results toward a gradual reduction of nutrients in these streams.

Considerable public attention is being paid to the quality of North Dakota lakes. The decline of quality in certain lakes, from nutrients and interference with natural flow led to State and EPA cooperation under the Clean Lakes Program, aimed at restoring threatened lakes.

From 1973 to 1980, EPA has allocated almost $72 million to the State of North Dakota for the construction of municipal sewage treatment plants. This allocation, under the Clean Water Act, provides 75 percent of the cost of these plants. The remaining money comes from State and local sources.

Drinking Water

In the year ending October 1, 1979, 757 full surveys and 602 additional state visitations were made of public water systems. The majority of these sources comply with state and federal requirements, with the exception of fluoride and bacteriological levels. (It should be noted that fluorides are naturally occurring compounds in North Dakota and many other areas of the world.)



Solid and Hazardous Waste

While North Dakota has not experienced the serious waste disposal problems common to the more urban states, changing conditions and the energy boom point to a need for improved solid waste management. One of the environmental impacts of development in western North Dakota is the generation of mining and utility wastes. This includes ash, particles and gases from coal combustion.

In a three-year study conducted for EPA, scientists from the University of North Dakota have found high concentrations of arsenic, apparently from the leaching of buried fly ash and sludge — byproducts of the lignite power generation process. The arsenic seems to be a problem peculiar to North Dakota lignite. The State Department of Health is developing a strategy for an environmentally safe disposal method to alleviate future negative impacts from the disposal of these wastes.

Approximately 59 open dumps still exist in smaller, widely scattered communities. The State Department of Health will continue to work with these communities to replace or improve these dumps.

A major purpose of the Resource Conservation and Recovery Act is to bring under control the disposal of hazardous wastes by industry, agriculture, mining and municipalities. Because North Dakota is an agrarian state with limited heavy industry, the disposal of large quantities of hazardous waste has not been a major problem. However, there has been an increased demand for disposal sites for leftover pesticides, herbicides and arsenic compounds, wastes from laboratories, and materials from military bases and missile sites. Since there are no hazardous waste disposal facilities in North Dakota now, the material must be shipped out-of-state for disposal, reprocessing or long-term storage.

Toxic Substances

Although North Dakota does not experience the crises associated with concentrations of major chemical industries, there are problems of toxics that must be addressed.

Pesticides, both insecticides and herbicides, are used extensively in North Dakota and the primary goal of the State's pesticide program is to ensure that these pesticides are used properly and safely. To accomplish this, the North Dakota Department of Agriculture certifies pesticide applicators, inspects pesticide dealers and applicators, and investigates reports of pesticide misuse. The inspections serve both to educate distributors and users and to enforce compliance with state and federal laws. EPA assists the State in enforcement action, training, and research. The North Dakota Department of Health provides technical assistance to users for the disposal of pesticides and containers.

The State is working with EPA to evaluate and correct the asbestos-in-schools problem in North Dakota. The Governor has designated the North Dakota Department of Public Instruction as the State agency with primary responsibility for this problem. Information has been distributed to the schools in the state advising them of the potential problem with asbestos. The North Dakota Department of Health and the State Department of Public Instruction provide technical assistance to schools for the safe disposal of the asbestos and

North Dakota

associated materials. Two PCB (polychlorinated biphenyl) incidents of major significance affected the State in FY 1980. One occurred in June, 1979 at the Pierce Packing Plant in Montana, resulting in the ultimate destruction and disposal of approximately 16,000 contaminated chickens in North Dakota. The second incident was caused by a leaking lubricating oil drum that contained PCB's and resulted in the contamination of a herd of cattle.

Radiation

North Dakota has no major radiation sources. However, transportation of radioactive materials through the State and industrial uses of radioactive materials have potential for environmental harm from radiation.

Radioactive ash from coal-fired power plants will increase the concentrations of naturally occurring radio-nuclides in western North Dakota. These, as well as past activities involving the ashing of lignite coal containing small amounts of uranium, must be examined.

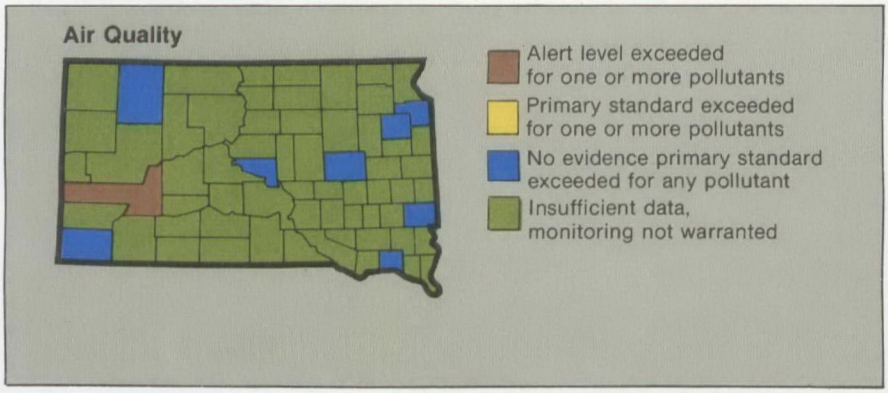
The goal of the radiation program is to protect the health and safety of the public as radiation sources are developed and used. The State Department of Health will continue to register and inspect X-ray facilities, license and inspect users of radioactive materials, and evaluate radiation levels of nonionizing sources on request. Legislative actions suggested for the 1981 General Assembly's consideration in the State/EPA agreement include requests for authority to implement a licensing fee system, authority to regulate nonionizing radiation sources and authority to regulate uranium mining and milling sites.

Noise

The overall noise environment in North Dakota has been good. However, with increased coal development activities in the western part of the state, the ambient noise levels and problems relating to noise are expected to increase. Vehicles are the major sources of noise in the state. Noise complaints received by the State Department of Health have involved refrigeration units on truck trailers, building ventilation systems, gas compressor substations, grain dryers, traffic, airport operations, sewage treatment plants, railroad switching operations and blowdown operations at coal-fired power plants.

The long-range goal of the noise control program is to prevent and minimize the health hazards caused by excessive noise. To achieve this goal, the State will continue to conduct a public awareness campaign, adopt state noise regulations, assist communities with noise control ordinances, conduct noise level surveys, and investigate noise complaints.

South Dakota



Air Quality

Air quality in South Dakota is generally good, and excellent in such areas as the Badlands and Wind Cave. The Rapid City area is a major exception and is a problem area because of fine dust in the air. A citizens' task force developed an abatement plan and ordinances were passed by the Pennington County Commission to control this "fugitive" dust.

An air monitoring network set up across the state monitors ambient air, specific sources, problem areas, and air quality in the larger cities.

There are presently 80 major air pollution sources in South Dakota. As of July 1, 1980, only one of these sources failed to meet State regulations.

Water Quality

Water quality problems in South Dakota vary. The major problems are non-point source pollution from surface water runoff, generally scarce water in parts of the state, point source pollution from industry and municipal waste water treatment discharge pipes. Many of these problems also contribute to increased groundwater contamination.

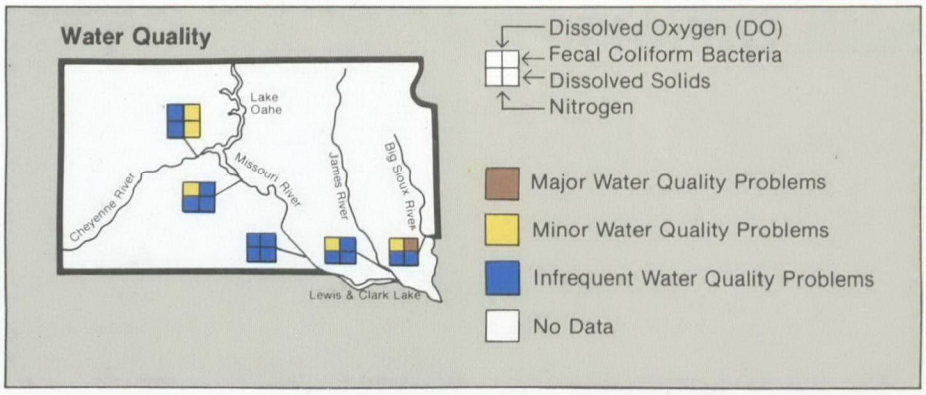
Non-point source pollution, (runoff from agriculture, construction, logging and road construction) severely affects water quality in South Dakota. Essentially all South Dakota waters are degraded by some form of non-point source pollution. The major contaminants are nitrates, phosphates and sediments. Nitrates and phosphates from fertilizers and organic wastes encourage algal blooms which severely limit recreational, municipal, and other public uses of lakes. Sediments remain suspended in stream and river channels and lakes, lessening their value for similar public activities. This type of pollution becomes more evident during periods of low precipitation. Scarcity of water may adversely affect surface water quality and limit many beneficial uses of the surface water. Surface water quality suffers from increased concentration of pollutants when dilution is reduced during low flow conditions, interfering directly with the needs of fish and wildlife within the state.

Industrial discharges continue to affect water quality. Although discharge of cyanide remains a problem, significant improvement has occurred in Whitewood Creek because of pollution control efforts at Homestake Gold Mine. Increased mining in South Dakota brings potential water quality degradation from sediments, heavy metals, acids, and radioactive minerals. Localized problems occur from meat processing and cheese plants. The potential exists for pollution of the Missouri River as large industries such as electrical generating plants and tanneries are attracted by that large source of good quality water.

Municipal sewage discharges affect stream segments of most basins although water quality has improved below recently constructed treatment plants. The most dramatic improvements were on the James River below Mitchell where fish kills frequently occurred before construction of the new wastewater treatment system. Whitewood Creek showed significant improvement downstream from the new Lead/Deadwood Sanitary District Plant and Homestake. Under the Clean Water Act, EPA has provided nearly $80 million to the State for the construction of municipal sewage facilities during the period 1973-1980. These funds covered 75 percent of the cost of constructing these plants, the balance being paid by State and/or local funds.

Groundwater contamination is increasing. Limited monitoring has shown unacceptable levels of nitrates, radioactive minerals, and heavy metals in many public and private domestic water supplies. Future monitoring will likely show that poor groundwater is widespread. Important sources of groundwater pollution — other than normal background sources — include seepage from wastewater treatment ponds, agricultural non-point sources, improperly cased artesian wells, exploration wells for oil, gas and minerals, mining activities, and individual wastewater systems.

South Dakota



Drinking Water

Only 32 of South Dakota's 405 community water supplies (8 percent) obtain their drinking water from surface sources. The groundwater supplies to these communities are generally highly mineralized. Eighty-two (82) percent of the municipal water supplies exceed at least one standard for inorganic chemicals. Fifty-one violations of inorganic primary standards established to protect health have been recorded with 30 water supplies violating the standard for fluoride. The common violations of secondary standards, designed to protect odor, taste and appearance, are total dissolved solids, sulfates, iron, and manganese. Eighty-three (83) percent of the state's community water supplies serve fewer than 100 people. The lack of alternate water sources and small size of the water system often combine to make attempts to improve the drinking water financially impossible. The construction of several rural water systems during the past decade has helped bring excellent quality water to many of these communities.

A radiological survey of South Dakota's public water supplies is beginning. Wells serving at least three systems exceed the standard for Radium-226. The State is working with these systems to ensure that proper treatment or blending will keep the consumer's water quality below the established standard.

A number of the state's surface waters contain natural organic matter which, when chlorinated in drinking water treatment plants, may produce chloroform and similar compounds in quantities potentially hazardous to human health.

When monitoring for these compounds (called trihalomethanes), EPA works with the affected water supplies to assure proper treatment for prevention or elimination of these chemicals. None of the state's water supplies are expected to exceed the other standards for organic chemicals.

Turbidity (murkiness) is a seasonal problem with several of the small surface water sources. Although the nature of the contamination is not considered a serious health problem in South Dakota, bacteriological contamination is also affected by seasonal changes. Spring and summer rainfall tend to increase the number of instances that exceed standards. A State chlorination grant program for small communities has eliminated bacteriological problems in a number of towns which had consistantly exceeded the coliform standard.

Solid and Hazardous Waste

The disposal of waste in uncontrolled sites, and upgrading of these sites continues to be a major problem, as is the uncontrolled handling of hazardous waste. Mismanagement of these wastes often results in land, air and water pollution. To solve these problems, the State worked toward upgrading or closing of uncontrolled sites, development of state and local management plans, drafting and revision of regulations, and implementation of public assistance and information programs.

Major setbacks to these management efforts have been the generally poor public acceptance of dump closure or upgrading, the lack of funds to aid local governments, inadequate legislation and delays in developing regulations.

South Dakota

Toxic Substances
Pesticides are used heavily in South Dakota. Grasshoppers are annually a problem. Herbicides are used to kill broadleaf weeds because water is scarce. Sometimes these chemicals drift onto nearby land causing problems and damage.

The disposal of pesticides, pesticide containers and pesticide-related wastes is also a problem. Most pesticides used in the state may be properly disposed of in approved landfills. However, no facilities exist to dispose of pesticides containing heavy metals and compounds such as DDT which are banned. Another area of concern is the widespread use and subsequent disposal of toxaphene used in the cattle scabies control program.

The South Dakota Department of Agriculture provided valuable assistance toward the establishment of pesticide control programs on four South Dakota Indian reservations. These programs are the first of their kind in the nation and are viewed as model programs for other reservations.

Radiation
Increased emphasis on energy independence has renewed interest in South Dakota's uranium ore. Several companies have increased uranium exploration, and two companies are planning to mine and mill uranium ore in the state.

The 1980 State Legislature approved $116,250 for a radiological monitoring program in the Department of Health, to evaluate the impact of these activities and other sources of radiation. The program will develop a monitoring system to provide baseline date in affected areas, and to provide technical assistance to industry and the public.

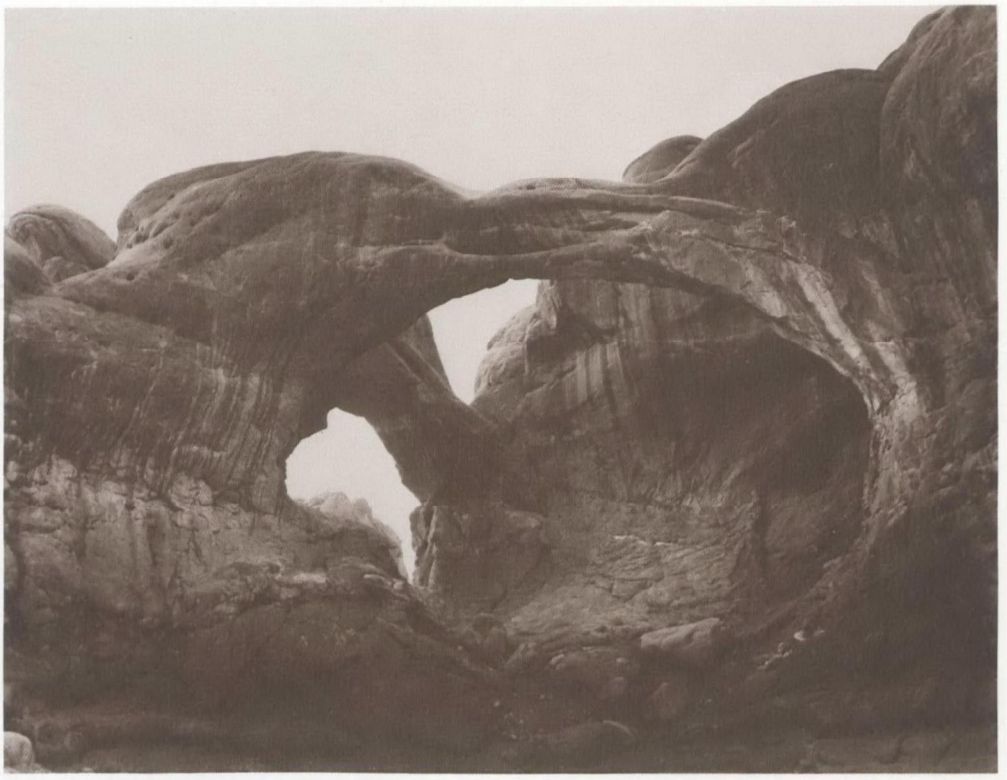
Naturally occurring radioactive minerals exist in some western South Dakota public water supplies. The State program will help assess health effects of radiation, and provide assistance in the proper management and disposal of radioactive sludge from water treatment. The State will also assess the effects of using water containing radioactive minerals for irrigation and other purposes.

Radioactive tailings from uranium extraction processes have been used as construction fill in some homesites at Edgemont. One family has been relocated, and others may be forced to move or modify their homes.

The Department of Health maintains an active source control program which includes registration and inspection of medical and dental uses of radiation.

Noise
The noise environment of South Dakota has low ambient sound levels typical of rural areas. Community noise (from motor vehicles, aircraft and stationary sources) is the major noise problem. Sioux Falls and Rapid City have made considerable progress in dealing with noise pollution with EPA's help. Brookings, Spearfish, Vermillion, Hot Springs, Aberdeen and Pierre are expected to follow suit.

Utah



Air Quality
Air quality in Utah is diverse. Northern and southern Utah contain some of the cleanest air in the Nation, while the Wasatch Front (Weber, Davis, Salt Lake and Utah counties) experiences violations of the national health standards for air. About 80 percent of the state's population lives along the Wasatch Front.

Air monitoring networks show that the standards are exceeded in the four counties as follows:

Weber County — *carbon monoxide and particulates*
Davis County — *carbon monoxide, ozone, and particulates*
Salt Lake County — *carbon monoxide, ozone, particulates and sulfur dioxide*
Utah County — *carbon monoxide and particulates*
The State Bureau of Air Quality is implementing a plan to eliminate these violations by 1982 for particulates, by 1983 for carbon monoxide, and by 1985 for ozone.

The major source of carbon monoxide violations is the automobile. The State Bureau of Air Quality and the Salt Lake and Davis county health departments are developing transportation control and vehicle inspection strategies to control this toxic gas. Ozone will be reduced by controlling hydrocarbons, which can produce ozone. Particulates come from fugitive and mobile sources, each of which is being attacked by different strategies. The major source of particulates in Utah County is the Geneva Steel Works. Negotiations have proceeded well in 1980 towards a solution. Sulfur dioxide violations are attributed to the Kennecott Copper Company at Magna.

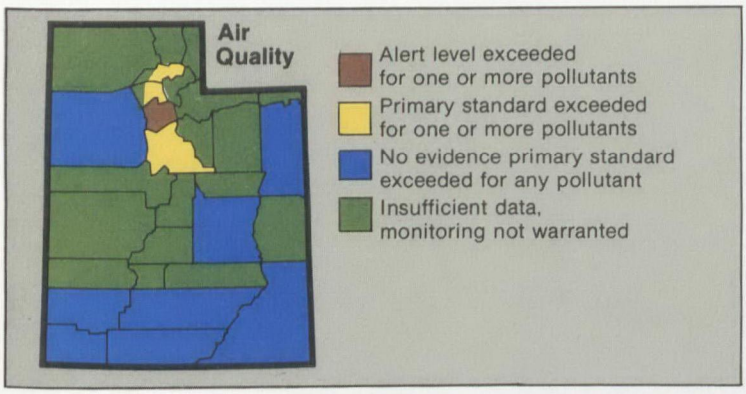
Bryce Canyon, Zion, Arches, Capitol Reef and Canyonland National Parks are all beautiful and have extremely clean air. However, if energy resources are developed nearby, the air quality will be threatened. EPA is especially concerned about potential decreases in visibility and has programs underway to prevent this.

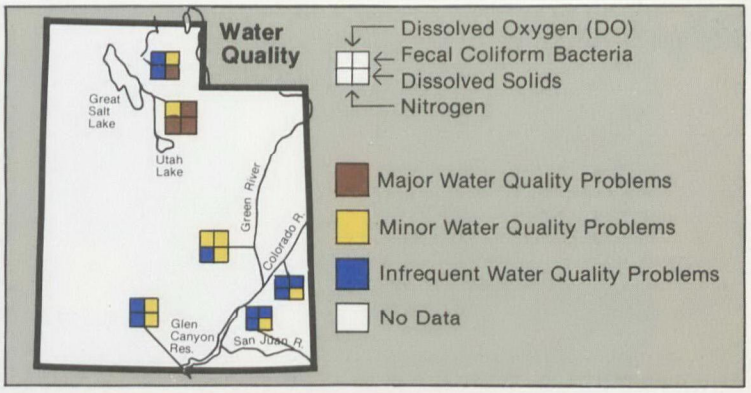
Water Quality
Wise management of Utah's limited water calls for water conservation and improving water quality. The primary objectives of the water program are to protect the public from unnecessary exposure to waterborne health hazards, and to protect and upgrade the quality of the waters of the state while maintaining the beneficial uses of these waters. The State goal is to meet in-stream water quality standards throughout the state by 1983.

Streams which originate in Utah's mountains are high quality at the headwaters, but are degraded as they flow into the valleys for human use. Flow fluctuates widely, with seasonal and climatic changes, and from irrigation diversions and reservoirs. Turbidity increases in the lower reaches from silt accumulation; salinity also increases.

In Salt Lake County, the major impacts on the Jordan River are municipal waste discharges and urban runoff. The Jordan is a cleanup success story if compared to 30 years ago when most municipal and industrial wastes were discharged untreated into the river. Although wastes are now treated, there are still problems of sub-standard oxygen levels and excessive bacteria levels due to the great population growth. Higher levels of waste treatment are planned, along with programs to minimize urban runoff.

Utah





About two-thirds of the communities with sewers in Utah are now substantially meeting effluent standards. Under the Clean Water Act, EPA provides 75 percent of the cost of municipal sewage treatment plants. From 1973 to 1980, EPA allotted nearly $117 million to the State of Utah for this purpose. Industrial sources are under a permit system, with treatment funded by the industry. About 85 percent of these companies are consistently meeting their permit conditions. Water quality management for energy developments and possible MX missile deployment are of particular concern. Rapid growth of the industries and the associated communities will require increasing vigilance to avoid unacceptable pollution.

Drinking Water

The State of Utah has assumed responsibility under the Federal Safe Drinking Water Act to monitor and control water supplies. Most supplies consist of high quality groundwater requiring minimal treatment, but there are instances of violation of bacteriological standards. Efforts are being made to eliminate these violations, and there have been no known recent outbreaks of waterborne diseases in Utah communities.

Energy developments will affect the availability of groundwater supplies, and more use of surface water is certain. In some instances more complex and costly treatment will be required to protect public health.

The increasingly common practice of injecting hazardous wastes into deep wells is a subject of State study and control.

Solid and Hazardous Waste

Of the 230 municipal solid waste disposal sites in Utah, about 90 percent have problems of inadequate resources within the communities for proper management. The State Bureau of Solid Waste Management is working with local officials to form a system of centralized landfills to be used by all waste generators in the area, so that unsanitary dumps can be closed.

There are 23 sites with potentially hazardous wastes which are currently under study. The State has indicated its desire to assume responsibility for control of the generation, transport, and ultimate disposal of hazardous wastes. Protection of public health will require careful management of newly generated wastes as well as cleanup of old (and sometimes abandoned) sites.

Toxic Substances

EPA and the State of Utah are implementing systems for the safe management of chemicals known to affect human health. These strategies will provide for adequate control authority without impeding technological innovation. A special program for the reduction of asbestos exposure in schools is being carried out by EPA.

Control and safe use of pesticides is the responsibility of the State Department of Agriculture in cooperation with EPA. The State provides for certification of commercial applicators.

Radiation

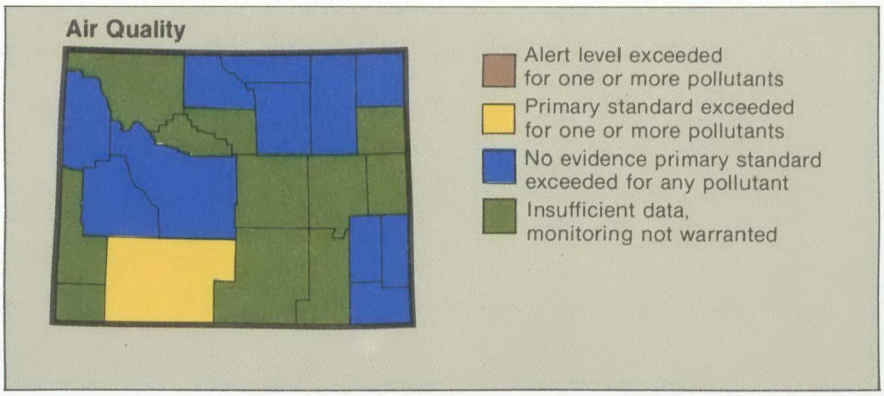
Protection of public health from unacceptable exposure to radiation in Utah is the joint goal of the State and EPA. Standards for the cleanup of buildings and open areas, under the Uranium Mill Tailing Radiation Control Act of 1978, call for screening and evaluating dwellings that may have been affected during the 50's and 60's. The State and EPA have developed an emergency response plan to handle inadvertent exposures.

Noise

EPA is working with Utah communities to provide technical assistance under the Quiet Communities Act of 1978. Salt Lake County has developed an active county-wide noise control program, Ogden is developing a program, and other municipalities have requested EPA's assistance in solving specific problems. Aircraft noise and problems resulting from energy development will require particular attention.

Utah

Wyoming



Air Quality

Most of the State of Wyoming enjoys remarkably clean air, and abundant energy and mineral resources destined for development. The challenge is to provide for such development while maintaining the quality of life which the residents expect.

Energy developments have brought rapid population growth, such as in Gillette in the northeast and Rock Springs in the southwest. Coal mining and burning for power production, coupled with urban air quality problems resulting from "boom town" growth, call for careful control to avoid impacts on public health and general welfare. Some deterioration of air quality is unavoidable as new facilities begin operation, but "best available control technology" requirements and special protection for the most scenic areas are expected to keep the state's air quality within safe limits.

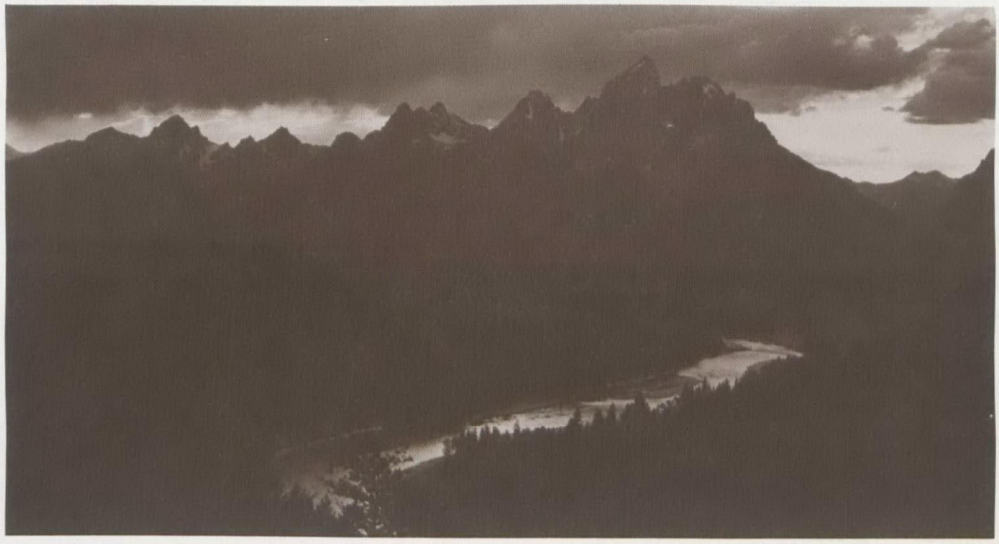
In Sweetwater County, the development of trona facilities has caused violations of particulate standards. Trona is a natural mineral which is converted to soda ash (sodium carbonate), a widely used chemical. A control program is expected to eliminate violations of air quality standards by the end of 1982.

Water Quality

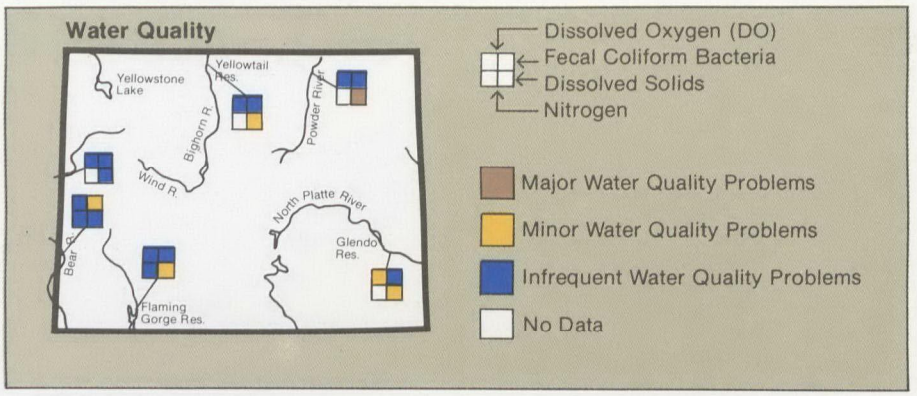
Water quality data and assessments show generally high quality water in most stream segments in Wyoming, and no significant problem in Wyoming. Municipal point sources not complying with sewage treatment standards are a concern. Thirteen stream segments currently exceed standards for bacteria, largely from inadequately treated sewage. This problem is being attacked through construction of new facilities, and improved operation of existing treatment plants. From 1973 to 1980, EPA allotted nearly $67 million to the State of Wyoming for the construction of sewage treatment facilities (EPA funds 75 percent of the cost, under the Clean Water Act, the balance being paid from State and/or local funds).

Non-point pollution of streams comes from natural water runoff, agriculture and such activities as mining, construction and urban development. The pollutants include salts (salinity), sediments, and nutrients (from fertilizers, for example). Salinity in the Green River Basin affects downstream users of Colorado River waters. Sediment and nutrient problems in the Flaming Gorge Reservoir affect aquatic life and recreational uses. Salinity, sediments and nutrients in other streams may affect lakes, reservoirs and municipal water supplies. Goose and Little Goose Creeks may not meet the 1983 goals because of sewage discharges, seepage from septic tanks, feedlot runoff and irrigation practices. Haggerty Creek is the only stream which is definitely not expected to meet 1983 goals, due to groundwater seepage from the Dos Lomas copper mines.

Both EPA and State Water Quality Division are addressing these problems through planning and management of this vital resource.



Wyoming



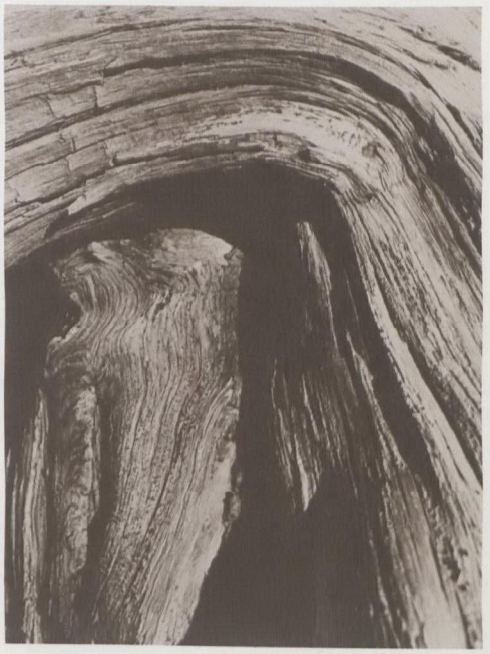
Drinking Water

Management of adequate supplies of healthful water is difficult in a semi-arid state with a relatively small population widely dispersed in communities, farms and ranches. Both drinking water and underground water protection are regulated under the Federal Safe Drinking Water Act. The State of Wyoming has developed procedures for the protection of groundwater quality. Until the State is prepared to assume responsibility for drinking water protection, EPA will administer the monitoring, control and enforcement program for public water systems, working closely with the State offices.

More than 900 public water systems have been inventoried and notified of their responsibilities under the Safe Drinking Water Act. Most of the 300 systems which serve year round resident populations have completed initial monitoring for bacteriological, turbidity, pesticide and inorganic chemical quality. Many of the 600 non-community systems, which serve transient or part-time populations, are now sampling their water for bacteria, turbidity and nitrates.

Problems receiving special attention include systems using surface waters without filtration, systems without disinfection, the presence of nitrates, mercury and selenium in a few supplies, and deficiencies in the monitoring and reporting of drinking water quality.

EPA has contracted with the University of Wyoming to inventory underground aquifers, and to assess their quantity, quality and availability for development. This study is of particular importance in view of increasing mineral exploration and extraction activities within the state.



Solid and Hazardous Waste

One of the purposes of the Federal Resource Conservation and Recovery Act is to prohibit future open dumping, and to require conversion of existing open dumps to facilities which do not pose a danger to the environment or to human health. Some 31 municipalities in Wyoming with populations greater than 3000 are being studied by the State to evaluate present solid waste disposal sites including identifying possible groundwater impacts, and checking for methane gas generation within the sites.

The State Department of Environmental Quality is developing a hazardous waste management program to conform to recent EPA regulations. The program aims at controlling the generation, treatment, transport and disposal of wastes known to be toxic. A committee helping in this effort has representation from Wyoming mining, petroleum, agriculture, trucking and government interests. The State has located 1736 surface impoundments and assessed their potential health hazards both at the surface and via seepage into underground water supplies.

Wyoming

Toxic Substances
EPA provides engineering consultation directly to school districts under the school asbestos program. The known hazards of breathing fine particles of asbestos (used for insulation and on some interior surfaces) include possible future cancer and other respiratory ailments.

EPA has directly informed all persons known to handle PCB's (polychlorinated biphenyls) on the proper marking and disposal regulations.

The widespread use of pesticides in an agricultural state such as Wyoming requires careful control of the identification, use and container disposal of these toxic chemicals. The State Department of Agriculture certifies individual applicators of restricted use pesticides (i.e., those most toxic to humans). A special problem in Wyoming is the wind-caused drift of herbicides which may cause damage to neighboring crops, ornamental plants and trees. Residual levels of pesticides in water are being monitored to prevent poisoning of aquatic and terrestrial life. The unique pest management problems in Wyoming call for experimental use of new pesticides and for emergency exemptions which require close monitoring for possible unforeseen effects.

Radiation
Radiation problems exist now in Wyoming, from natural sources and the remnants of old facilities from the mining and treatment of uranium ores. Of greater magnitude are problems associated with the development of new uranium mining and milling complexes. Of major concern is the development of solution mining of uranium, where the mineral is dissolved in place (in situ). Large amounts of water are required and the potential for affecting groundwater is high.

Noise
The noise environment in Wyoming can generally be characterized as having quiet regions typical of rural areas. The major noise sources in Wyoming are those associated with energy, especially coal development operations, including mining operations, coal trains and trucks.

Concern about community noise is increasing in the larger urban areas of the state. In 1980, EPA helped Laramie, Casper and Cheyenne with local noise control problems. Additional requests for assistance from Wyoming cities have been received. EPA's response to these requests will depend on availability of resources to adequately handle them.

Aircraft noise is a serious problem in some areas of the state. In these areas, low ambient sound levels cause aircraft noise to be more intrusive for a longer period of time than in typically louder urban environments. Preservation of pristine areas, quality of life for rural residents, and possible adverse health effects are all important issues related to aircraft noise in Wyoming.

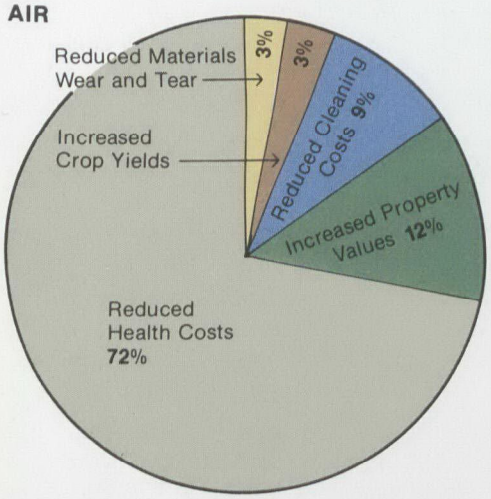
The problem in Jackson is an excellent example of an environmental problem: proponents of large jet aircraft access to the Jackson Airport favor convenience and speed of service; opponents object to the noise levels which would be reached in this quiet location.

Wyoming

Benefits...Costs...Benefits...Costs...

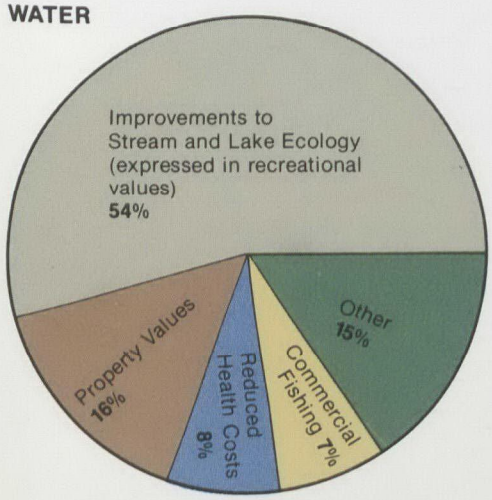
BENEFITS OF AIR AND WATER POLLUTION CONTROL

AIR



1978 Benefits*, $23.3 billion in benefits from air pollution control

WATER



1978 Benefits*, $12.3 billion in benefits from water pollution control (excluding unconventional pollutants)

*"The Benefits of Air and Water Pollution Control: A Review and Synthesis of Recent Estimates," A.M. Freeman III, Bowdoin College, Brunswick, Maine 04011, August 1979.

The Consumer Price Index (CPI) is a composite measure of the average prices of a fixed collection, or market basket, of goods and services . . . food, housing, clothing, medical care, transportation, entertainment, etc. When it costs more to buy this market basket, the economy experiences inflation . . . and we all know about that. Environmental legislation adds to inflation, but very little. Between 1970 and 1978, environmental legislation added slightly more than three-tenths of one percentage point to the annual rate of increase of the CPI. This calculation is based on gross costs and doesn't take into account the benefits resulting from the costs: the avoidance of prolonged illness and early death and of damage to the ecosystem. The major causes of inflation were elsewhere . . . in price rises in the other items in the basket (22 percent food, 39 percent housing, 7.8 percent energy, etc.).

Between 1980 and 1986, air and water pollution controls will stimulate employment; unemployment will be reduced by an average of four-tenths of one percentage point. This means, 400,000 people will have jobs in the pollution control equipment industry, and jobs for the operation and maintenance of this equipment.

Between 1970 and 1979, no plants were closed in EPA Region 8. Nationally, there has been essentially no change in jobs through plant closings because jobs were created offsetting the losses.

A study done by University of Wyoming and University of California scientists in 1979 showed that a 30 percent improvement in air quality would increase real estate values $500 per household (determined by comparing selling prices for similar houses in areas with different air quality). Personal interviews with these residents indicated a willingness to spend $350 per household to achieve a 30 percent improvement. The cost of *all* environmental programs in 1978 was $26.9 billion, or about $120 per person. From 1970-1977, total smoke and dust declined by 12 percent . . . sulfur dioxide was reduced by 30 percent.

"Cancer claims 400,000 lives per year . . . one in four Americans . . . one person per family. There is substantial evidence that environmental factors are among the major causes of cancer including potential cancer-causing substances (called carcinogens) in food, air, drinking water, tobacco products, workplaces, drugs and household products, as well as radiation. Many people are exposed unknowingly." The Regulatory Council, September 28, 1979.

"What is the price tag for lives saved by avoiding future diseases, since asbestos and other substances in our lives today cause cancer in 30 years? How much will you pay for a 6 year-old who is not disfigured from flammable sleepwear? How do we calculate the exact benefits of being able to see across the Grand Canyon, of avoiding needless destruction of recreation areas?" Mark Greene, Public Citizens Congress Watch.

The Next Ten Years...

Metals are necessary in low concentrations for human and ecological life. In larger doses they become poisons. No mathematical projection could predict this reversal of benefits from desirable to toxic. Projections of the next ten years may also be reversed, but they may be useful in broadening and focusing our vision. We are all beginning to realize that all pollution always goes somewhere, but our knowledge of exactly where, in what form and with what impact is hazy. We all know the cost for cleaning it up will increase at least as fast as inflation, but we are hard pressed to predict the incremental costs above inflation, and an outbreak of disease or system failure may be necessary to uncover these postponed expenses. "An ounce of prevention is worth a pound of cure" should become our first law of ecology.

Hazards associated with abandoned dumps, chemicals that are classified as toxics, radiation and conflicts over the management and use of the Earth's resources are on most people's lists of issues to be dealt with in the 80's. Water conservation, energy conservation, acid rain, protection of prime agricultural land, ground water and wetlands protection, endangered species and recycling are high on our personal agendas for action. But where on our lists are the issues we don't know about today . . . where on our lists are the items aimed at prevention . . . monitoring, surveillance, analysis, research, epidemiology, conflict resolution, public participation and free press.

Perhaps the usefulness of this exercise of extrapolating into the future is in recognizing the potential for surprise, and beginning to plan now for the unpredictable. Delegating this responsibility to the lowest practicable level is probably wise . . . integrating our judgment across political, geographical and social, economic and media lines will definitely produce more positive results.

Suggested Reading

Blueprint for Survival, by Edward Goldsmith and other editors of the ECOLOGIST. Houghton Mifflin Co., 1972.

The Closing Circle; Nature, Man and Technology, by Barry Commoner. Knopf, 1971.

Design with Nature, by Ian McHarg. Natural History Press for the American Museum of Natural History, 1969.

Earth the Living Planet, by Michael J. Bradshaw, Wiley, 1977.

Ecoscience: Population, Resources, Environment, by Paul R. Ehrlich, Anna H. Ehrlich, and John P. Holden. 2nd ed. Wiley, 1977.

Environment and Man, by Richard Wagner. Norton, 1974.

Environmental Quality — 1979, by the Council on Environmental Quality, U.S. Government Printing Office, 1980.

From Sea to Shining Sea; a Report on the American Environment — Our Natural Heritage, by the President's Council on Recreation and Natural Beauty. U.S. Government Printing Office, 1968.

Global 2000, by the Council on Environmental Quality. U.S. Government Printing Office, 1980.

Great Chain of Life, by Joseph Wood Krutch. Pyramid, 1957.

The Human Future Revisited, by Harrison Brown. Norton, 1978.

The Human Scale, by Kirkpatrick Sale, Coward, McCann and Geoghegan. New York, 1980.

Man, Nature and History: Controlling the Environment, by W.M.S. Russell. Natural History Press for the American Museum of Natural History, 1969.

Reconciling Man with the Environment, by Eric Ashby. Stanford University Press, 1978.

A Sand County Almanac, and Sketches Here and There, by Aldo Leopold. Oxford University Press, 1949.

Silent Spring, by Rachel Carson. Fawcett, 1962.

Small is Beautiful, E. F. Schumacher. Harper, 1976.

Your Environment and What You Can Do About It, by Richard Saltonstall, Jr. Walker & Co., 1970.

There are some problems that are too large for the lone individual to deal with. Environmental pollution is such a problem. The People, that is to say the complex of individuals, through their elected representatives have said, "Government, do this for us." Governments in this country are only individuals doing a job with which other individuals have charged them.

But the individual's responsibility does not stop there for two reasons. One, since governments are made up of people, they are not perfect and require the continuing watchfulness by, and participation of, the people they serve and two; because there are still many things individuals must do for themselves.

While government can write standards, administer funds, provide technical assistance and enforce laws, it cannot and should not, make consumer and lifestyle decisions for households. Yet it is the cumulative impact of such decisions which are at the base of all environmental problems.

The real test of the '80's may well be how individuals make their choices. Many environmental decisions made early in the '70's were made in an economic atmosphere markedly different from today's.

Will Americans continue to make wise environmental decisions which almost always have long-term economic benefits, or will they tend to choose the deceptive but tempting short-term economic benefits of doing nothing where particular pollution problems are concerned?

In our increasingly complex society, we are faced by a seemingly overwhelming array of problems and pressures. We cannot afford to allow talented individuals to "drop out" of the search for solutions.

History will one day note the '70's were the years we began to reclaim our environment. Will it record the '80's as the time we sustained or gave up the effort?

Gene Lucero

Gene Lucero
Deputy Regional Administrator

For Further Information

If you need additional information about specific EPA programs, please write to EPA, 1860 Lincoln Street, Denver, CO 80295 or telephone the appropriate number listed below. If you are uncertain which number is correct, dial (303) 837-5927.

General Subject Area Directory

Air Quality	**837-3471**
Auto Emissions	837-3763
State Implementation Plans	837-3711
Prevention of Significant Deterioration (PSD) Review	837-3763
Water Quality	**837-4871**
Grants	837-3961
Planning	837-3886
Environmental Impact Statements	837-4831
Control Technology Branch	837-2735
Solid Wastes	837-2221
Pesticides	837-3926
Toxic Materials	837-3926
Noise	837-4136
Radiation	837-4535
Energy Development	837-5914
Enforcement	837-3868
Permits	837-3760
Montana Operations Office (406) 449-5432 301 South Park, Drawer 10096, Helena MT 59601	
Personnel Locator	837-2725
Library	837-2560
General assistance, requests for speakers, films & non-technical publications	837-5927
Oil Spills/Emergency Response	
Metro-Denver	837-2468
Toll-free: CO Only	1-800-332-3321
Toll-free: Mt., ND, SD, UT & WYO	1-800-525-3022

If you would like more information on issues closer to home, consider beginning with your city or county government. At the State level, the following organizations stand ready to assist you:

Colorado (AIR)
Department of Health
11th & Bellaire Streets, Denver CO 80220
320-4180

Colorado (Water and others)
Department of Health
4210 E. 11th Avenue, Denver CO 80220
320-8333

Montana
Department of Health
Environmental Sciences Division
Cogswell Building, Helena MT 59601
449-3946

North Dakota
Division of Environmental Engineering
1200 Missouri, Bismarck ND 58501
224-2348

South Dakota (Air)
Department of Health
Joe Foss Building, Pierre SD 57501
773-3329

South Dakota (Water)
Department of Water and
Natural Resources
Joe Foss Building, Pierre SD 57501
773-3329

Utah
Division of Environmental Health
P.O. Box 2500
Salt Lake City UT 84110
533-6121

Wyoming
Department of Environmental Quality
Hathaway Building, Cheyenne WY 82001
777-7937

For supplementary technical background data on air and water quality trends see *Water and Air Quality Trends in Region 8*, (EPA 908/2-80/001 and 02).