EPA Region VIII

Strategic Planning Initiative

Phase I

November 30, 1990

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VIII
999 18th STREET - SUITE 500
DENVER, COLORADO 80202-2405
NOV 30 1990

Ref: 8RA

MEMORANDUM

TO: F. Henry Habicht II
Deputy Administrator

FROM: James J. Scherer
Regional Administrator

SUBJECT: Region VIII Strategic Planning Initiative

I am pleased to forward the results from the first phase of Region VIII's strategic planning initiative. This package (see Enclosure) contains the products of our Comparative Risk Project and a list of areas under consideration for regional investment and reduced investment. In the coming months my staff will continue to develop these areas of consideration, culminating in a risk reduction plan for the region that I will present at the Annual Planning Meeting in February. Regional and state efforts during the last eight months clearly indicate significant progress toward successfully implementing strategic planning in Region VIII.

Results of Region VIII's Comparative Risk Project

The Region VIII Comparative Risk Project produced human health-based and ecologically-based rankings for twenty-three environmental problem areas. Several high ranking areas may provide risk reduction opportunities for the region in agricultural chemicals and prevention of physical degradation of habitats, among others.

The process also highlighted important differences between risk rankings within individual states and a ranking for the region as a whole. Attachment A, "Ranking of Environmental Problem Areas," presents the regional rankings completed by EPA staff. I have also included a second set of rankings: Attachment B, "Final Rankings of Environmental Areas," that reflects changes to the regional ranking based on input by the six Region VIII states. Some of the significant differences in the two sets of rankings address state specific concerns about criteria air pollutants and groundwater issues. A summary of state priorities and comments from each state is presented in Attachment C, "State/EPA Discussions on Comparative Risk and Strategic Planning Initiative."

Comparative Risk Project Process

Last April Region VIII "kicked-off" its comparative risk process by forming a Comparative Risk Advisory Council (CRAC) made up of managers and key staff representing each division and office in the region. The group defined the issues to be analyzed, approved the analytical approach, reviewed the results of the analysis and, ultimately, developed a preliminary set of risk rankings.

Members were asked to draw from their own professional judgment, extensive discussions within the group and additional input from program division staff in making ranking decisions. Data from a regionally funded technical study was also provided to assist in the ranking process. The study, which received extensive review and comment by EPA staff, provided CRAC members with health, ecological and welfare risk assessments for each problem area, a description of uncertainties associated with each analysis, and supporting data on a state-by-state basis. The region also funded a study of regional and national economic and demographic trends in order to identify emerging issues.

The resulting regional risk rankings clustered the problem areas into five categories with "Category 1" representing the highest level of risk. Issues were not ranked within each category.

The state environmental directors were advised of the process throughout the summer. During the last two months of the project, the Region VIII comparative risk director and one member of the senior staff visited each state to discuss differences between state rankings and the regional rankings.

This effort culminated at the State Directors Meeting held in early November. The meeting was attended by EPA senior staff and state environmental program directors. During the meeting the results of the individual state visits were discussed and a second risk ranking was produced to incorporate state input.

Attachment D, "Comparative Risk Project Summary Report," contains a comprehensive description of the comparative risk process which I have briefly described.

Strategic Criteria and Investment/Reduced Investment Opportunities

In addition to comparative risk, Region VIII has identified several other strategic criteria which we believe are fundamental to successful development of our overall strategic plan. The six criteria -- Comparative Risk, Technical Assistance/Education, Pollution Prevention, Enforcement, State/Local/Tribal/EPA

Relations and Multi-Media Projects -- have been endorsed by regional senior management and the state directors. A further description of each area is provided in Attachment E, "Strategic Criteria and Evaluation Matrix." As we prepare our strategic plan, we will use the matrix to evaluate investments and reduced investments against each criteria to ensure that these important regional goals are met.

Included in attachment F, "Project/Issue Areas Under Consideration," is a list of areas which the region is examining for resource reallocation during the strategic planning process. During the coming months my staff will work to develop these proposals into an integrated regional strategy. We look forward to continuing this process and to the environmental improvements which it will allow us to achieve. Thank you for your continued support of this important initiative.

Enclosure: EPA Region VIII Strategic Planning Initiative Phase I

Attachment A - Ranking of Environmental Problem Areas
Attachment B - Final Rankings of Environmental Problem Areas
Attachment C - State/EPA Discussions on Comparative Risk and Strategic Planning Initiative
Attachment D - Comparative Risk Project Summary Report
Attachment E - Strategic Criteria and Evaluation Matrix
Attachment F - Project/Issue Areas Under Consideration

cc: Jack McGraw
J. Clarence Davies
Ralph R. Bauer
Stanley Laskowski
Robert Currie
Kerrigan Clough
Nola Cooke
Irwin Dickstein
Max Dodson
Robert Duprey
Tom Speicher
John Wardell
Jon Yeagley
Deb Janik
Don Patton

Attachment A

REGION VIII COMPARATIVE RISK PROJECT
RANKING OF ENVIRONMENTAL PROBLEM AREAS

HUMAN HEALTH RISK

Category 1

Indoor Air Pollution
Indoor Radon
Pesticides

Category 2

Criteria Air Pollutants
Lead from all Sources

Category 3

Drinking Water Contamination
Hazardous/Toxic Air Pollutants
Radiation other than Radon
Storage Tanks
Ozone Depletion & Climate Change

Category 4

Abandoned/Superfund Waste Sites
RCRA Hazardous Waste
Groundwater Contamination
Accidental Releases
Mining Wastes
Ind. Discharges to Surface Water

Category 5

Nonpoint Surface Water Pollution
Industrial Solid Waste
Municipal Solid Waste
Municipal Wastewater Discharges

ECOLOGICAL RISK

Category 1

Nonpoint Surface Water Pollution
Ozone Depletion & Climate Change
Physical Degradation of Terrestrial Habitats
Physical Degradation of Wetlands and Aquatic Habitats

Category 2

Pesticides
Mining Wastes

Category 3

Abandoned/Superfund Waste Sites
Ind. Discharges to Surface Water
Municipal Wastewater Discharges

Category 4

Criteria Air Pollutants
Acid Deposition & Visibility Deg.
Accidental Releases
RCRA Hazardous Waste
Storage Tanks
Municipal Solid Waste
Industrial Solid Waste

Category 5

Groundwater Contamination
Radiation other than Radon
Lead from all Sources
Hazardous/Toxic Air Pollutants

Attachment B

FINAL RANKINGS OF ENVIRONMENTAL PROBLEM AREAS
(Includes State Input)

HUMAN HEALTH RISK

Category 1

Indoor Air Pollution and Radon
Criteria Air Pollutants
Pesticides

Category 2

Drinking Water Contamination
Groundwater Contamination
Lead from all Sources

Category 3

Ozone Depletion & Climate Change
Hazardous/Toxic Air Pollutants
Radiation other than Radon
Storage Tanks

Category 4

Abandoned/Superfund Waste Sites
Mining Wastes
RCRA Hazardous Waste
Municipal Solid Waste
Industrial Solid Waste
Accidental Releases
Ind. Discharges to Surface Water

Category 5

Nonpoint Surface Water Pollution
Municipal Wastewater Discharges

ECOLOGICAL RISK

Category 1

Nonpoint Surface Water Pollution
Ozone Depletion & Climate Change
Physical Degradation of Wetlands and Aquatic Habitats

Category 2

Physical Degradation of Terrestrial Habitats
Pesticides
Mining Wastes
Groundwater Contamination

Category 3

Abandoned/Superfund Waste Sites
Ind. Discharges to Surface Water
Municipal Wastewater Discharges
Municipal Solid Waste
Industrial Solid Waste

Category 4

Criteria Air Pollutants
Acid Deposition & Visibility Deg.
Accidental Releases
RCRA Hazardous Waste
Storage Tanks

Category 5

Radiation other than Radon
Lead from all Sources
Hazardous/Toxic Air Pollutants

ATTACHMENT C

EPA REGION VIII

STATE/EPA DISCUSSIONS ON COMPARATIVE RISK AND STRATEGIC PLANNING INITIATIVE

North Dakota	October 22, 1990
South Dakota	October 23, 1990
Utah	October 24, 1990
Montana	November 1, 1990
Wyoming	November 2, 1990
Colorado	November 6, 1990

BACKGROUND

EPA's comparative risk and strategic planning initiative is a nationwide effort designed to focus the agency's efforts on today's most serious environmental issues and to generate strategies that will most effectively address these issues. For EPA's regional offices, the first phase of this effort was to conduct an analysis of the risks associated with a wide range of environmental issues and to rank the issues based on relative levels of risk.

EPA Region VIII's participation in this agency-wide initiative began in earnest in April 1990 with the formation of the Region VIII Comparative Risk Advisory Council consisting of 12 Region VIII employees representing each division and office in the region. With contractor assistance, the Advisory Council examined the risks associated with 23 environmental issues. After reviewing the information gathered through the analysis, the Advisory Council completed two rankings - a human health risk ranking and an ecological risk ranking. These rankings are included here as Attachment 1, and a complete summary of the work of the Advisory Council can be found in their final report.

From the beginning of this initiative in Region VIII, the Regional and Deputy Regional Administrators, as well as the rest of the senior staff, have emphasized the importance of involving the state environmental program offices. The first big step towards making the states partners in this effort will take place at the state directors' meeting to be held November 8-9, 1990 in Keystone, Colorado. At this meeting, the state directors and EPA senior staff will work to clarify the major goals that the region should pursue through strategic planning.

In preparation for this meeting, a member of the senior staff and the project director visited each of the six states in the region to discuss the background and current status of Region VIII strategic planning. Specifically, state and EPA representatives discussed how the risks in each state differ from the Advisory Council's risk rankings and preliminary suggestions on goals and strategies that the states would like to see the region pursue through the strategic planning process.

This document presents in bullet format a summary of each state visit. The suggestions made in each state will be synthesized and used as the starting point for discussion at the state directors' meeting.

NORTH DAKOTA

ATTENDEES

Francis Schwindt, Chief, Environmental Health Section
Dana Mount, Director, Division of Environmental Engineering
Dennis Fewless, Director, Div. of Water Supply & Pollution Cntrl.
Martin Shock, Director, Div. of Environmental Waste Management
Chuck Riddell, Environmental Health Section
Teri Lunde, Environmental Health Section
Jack Hidinger, Deputy Director, Region VIII Air & Toxics Division
Patrick Cummins, Region VIII Comparative Risk Project Director

RISK RANKINGS

Problem areas **ranked higher for human health risk by North Dakota** than by the Region VIII Comparative Risk Advisory Council:

-- **Groundwater and Drinking Water Contamination**; relatively high due to natural contamination and contamination from agricultural activities, underground storage tanks, and waste management activities. Many residents use untreated groundwater from wells as their source of drinking water.

-- **Industrial Solid Waste**; problems with disposal of fly ash, oil and gas exploration wastes, importation of wastes from other states and Canada, and wastes from gas plants.

-- **Nonpoint Source Surface Water Pollution**; pesticide, nutrient, and sediment contamination from agricultural activity may lead to increased direct human exposure as well as bioaccumulation of toxics.

Problem areas **ranked lower for human health risk by North Dakota** than by the Region VIII Comparative Risk Advisory Council:

-- **Criteria Air Pollutants**; North Dakota is in attainment for all ambient air quality standards.

-- **Indoor Air Pollutants**; this problem has received little attention in North Dakota.

-- **Lead from all Sources**; few major sources of lead pollution.

-- **Radiation other than Radon**; limited sources.

-- **Climate Change and Ozone Depletion**; information to conclude that this is a serious problem for North Dakota is lacking.

NORTH DAKOTA (cont.)

Problem areas **ranked higher for ecological risk by North Dakota** than by the Region VIII Comparative Risk Advisory Council:

-- **Groundwater Contamination;** concern over impacts of groundwater contamination on ecosystems, particularly through bioaccumulation of toxics from agriculture.

-- **Accidental Chemical Releases;** several major accidents in the recent past that have led to significant commitment of department resources, and have posed potentially serious problems.

Problem areas **ranked lower for ecological risk by North Dakota** than by the Region VIII Comparative Risk Advisory Council:

-- **Physical Degradation of Wetlands and Aquatic Habitats and Physical Degradation of Terrestrial Habitats;** perception of the ecological risks from these issues is different in an agricultural state like North Dakota. Responsibility/ authority does not rest with Environmental Health Section.

-- **Mining Wastes;** limited activity in North Dakota

-- **Climate Change and Ozone Depletion;** information to conclude that this is a serious problem for North Dakota is lacking.

GOALS AND STRATEGIES

The following ideas were suggested as possible goals or strategies for Region VIII to pursue through the strategic planning initiative.

-- Attempt to secure additional discretionary funds that could be used on high priority projects.

-- A continuous effort between EPA and the states to develop more of a partnership approach. Relationship is constantly changing - new laws, new staff, etc. More of a problem at the staff level. Could be addressed through informal interaction among staff (i.e., more visits to states or state staff visit EPA offices). Staff exchanges, IPAs would also help.

-- Less duplication by EPA.

-- Less oversight of enforcement actions. Don't get bogged down in the little stuff.

-- Increased training and technical assistance, particularly laboratory assistance.

NORTH DAKOTA (cont.)

-- "Automatic" delegation once state has demonstrated capability. Eliminate redundant and burdensome requirements. Give state flexibility to demonstrate capability in different ways that lead to the same end.

-- Put emphasis on compliance not enforcement. Enforcement actions create an adversarial relationship between EPA and state.

-- Increase EPA's commitment to improving environmental management on Indian reservations. States filling in for EPA when we don't do the job.

-- At the national level, EPA cannot continue to impose regulations without resources to help implement them.

-- Increased communication between those writing the laws and those implementing the laws. Example - Agency ranks solid waste sites low for risk but imposes strict, costly regulations.

-- Address uncertainty in risk assessments through increased data collection and better science. Target potentially high risk areas first.

-- Incentives and regulatory flexibility to pursue pollution prevention strategies.

SOUTH DAKOTA

ATTENDEES

Reese Peck, Deputy Secretary, Dept. of Water & Natural Resources
Steve Pirner, Director, Division of Environmental Regulation
Mark Steichen, Director, Division of Water Resources Management
John Hatch, Director, Division of Water Rights
Pat Rice, Director, Division of Technical and Support Services
Annie Hollenbeck, Division of Technical and Support Services
Steve Tuber, Comptroller, EPA Region VIII
Patrick Cummins, Region VIII Comparative Risk Project Director

RISK RANKINGS

There were considerable differences between the South Dakota human health risk ranking and the ranking completed by the Region VIII Comparative Risk Advisory Council. In general, problem areas associated with water and land pollution were ranked higher for human health risk in South Dakota, and problem areas related to air pollution were ranked lower.

-- **Drinking Water Contamination, Groundwater Contamination, and Storage Tanks** were ranked 1st, 2nd, and 3rd respectively. There is significant overlap between these issues, and, along with **Pesticides** (ranked 4th), they are thought to be relatively serious problems in South Dakota.

-- **Industrial and Municipal Wastewater Discharges** and **Nonpoint Source Surface Water Pollution** were ranked considerable higher. Major industrial dischargers include mining, meat packing, and feed lots. Agricultural activity leads to much of the nonpoint source surface water pollution.

-- Outdoor air pollution is not a serious problem in South Dakota, and therefore, **Criteria Air Pollutants** and **Hazardous and Toxic Air Pollutants** were ranked lower. These issues have received more attention lately because of a proposed incinerator that would burn wastes from out of state.

-- **Indoor Air Pollution** and **Indoor Radon**, have received little attention in South Dakota, and state officials do not perceive them to be serious problems. Uncertainty in the risk estimates was also cited as an important factor for ranking these issues low.

There was much more agreement between the South Dakota and regional rankings for ecological risks. In fact, the only area where there was a large difference between the two was **Climate Change and Ozone Depletion** which was ranked at the top of the regional ranking and near the bottom of the state ranking. This difference is largely due to different perceptions regarding the validity of the information on these problems. Waste importation was also mentioned as an emerging problem in South Dakota.

GOALS AND STRATEGIES

The following ideas were suggested as possible goals or strategies for Region VIII to pursue through the strategic planning initiative.

-- EPA staff should be working to provide state staff with needed technical assistance and should not be duplicating state work and engaging in continuous oversight.

-- Move from program implementation to comprehensive, integrated environmental problem solving.

-- Small states like South Dakota need more flexibility to spend federal dollars on their high priority problems.

-- Improve working relationships at the staff level. More EPA state visits, state staff visit regional office, IPAs, etc.

-- States need "expert witness" assistance that they do not have in-house. EPA should be a resource for this.

-- Increase public education/communication at all levels - adults, children, businesses, etc.

-- At the national level, EPA cannot continue to impose regulations without resources to help implement them.

-- Reconcile federal requirements that conflict with state requirements.

-- Work for better coordination among EPA programs.

UTAH

ATTENDEES

Ken Alkema, Director, Division of Environmental Health
Gayle Smith, Director, Bureau of Drinking Water Sanitation
Larry Anderson, Director, Bureau of Radiation
Fred Pehrson, Bureau of Water Pollution Control
Marv Maxell, Bureau of Air Quality
Rusty Lundberg, Bureau of Solid and Hazardous Waste
Brad Johnson, Bureau of Environmental Response and Remediation
Bruce Slater, Division of Environmental Health
Roger Frenette, Dep. Director, Region VIII Water Management Div.
Patrick Cummins, Region VIII Comparative Risk Project Director

RISK RANKINGS

While Utah had not completed risk rankings at the time of this meeting, the EPA and state representatives present engaged in a detailed discussion of human health and ecological risks in Utah and how they compared to the ranking completed by the Region VIII Comparative Risk Advisory Council. More information on Utah's risk rankings should be available in the near future.

In general, the state representatives felt that the regional rankings are fair approximations of the risks in Utah. Some potential differences are noted below.

-- **Indoor Radon** may be ranked significantly lower in Utah based on a lack of confidence in the methodology that the high risk estimates are derived from.

-- While **Criteria Air Pollutants** ranked quite high in the regional ranking, they may rank even higher in Utah because of large populations living in areas that are not in attainment for federal ambient air quality standards.

-- It was noted that the methodology used to analyze **Municipal and Industrial Solid Waste** was limited to site specific effects and does not adequately account for the risks that would show up in a life cycle analysis. Utah may choose to include these effects and rank these issues higher.

-- **Drinking Water Contamination** may rank higher in Utah.

-- Utah's ecological risk ranking may show more concern for **Abandoned/Superfund Waste Sites, Criteria Air Pollutants,** and **Lead from all Sources** than was reflected in the regional rankings. These problems may pose relatively high ecological risks due to widespread and persistent pollution and the possibility for bioaccumulation of toxics.

GOALS AND STRATEGIES

The following ideas were suggested as possible goals or strategies for Region VIII to pursue through the strategic planning initiative.

-- Elevate ecological concerns to the same level as health concerns.

-- Target environmental issues with clearly demonstrated problems as opposed to those with high levels of uncertainty.

-- Emphasize environmental indicators instead of program indicators (beans) to measure a program's success.

-- Recognize that different programs require different management strategies - prevention v. remediation

-- Increase state/EPA partnership through IPAs, and other forms of staff sharing. Promote staff level interaction on a routine basis as opposed to in an oversight or adversarial context.

-- Minimize conflicting messages from EPA HQ and Region 8.

-- Improve coordination of processes for state comment on EPA regulatory development, etc. Need better and more timely communication.

-- Don't try to modify SEA at mid-year based on program guidance that comes out after the fact.

-- Stop using guidance to circumvent rule-making.

-- Put more resources into communicating with and educating the regulated industries, public, children, etc. Also, more "Mobilization" type efforts that leverage work of local agencies.

-- Begin breaking down barriers to multi-media environmental problem solving. Take a more holistic view of environmental problems.

-- Pursue multi-media demonstration projects.

-- Stop using methods of economic analysis that discount future values.

-- Work for better coordination between different federal agencies.

MONTANA

ATTENDEES

Steve Pilcher, Administrator, Environmental Sciences Division
Tom Ellerhoff, Administrative Officer
Loren Bahls, Acting Chief, Water Quality Bureau
Jeff Chaffee, Chief, Air Quality Bureau
Duane Robertson, Chief, Solid and Hazardous Waste Bureau
Vic Andersen, Superfund Section Supervisor
Roger Thorvilson, Solid and Hazardous Waste Section Supervisor
John Geach, UST/LUST Section Supervisor
Irv Dickstein, Director, Region VIII Air and Toxics Division
Patrick Cummins, Region VIII Comparative Risk Project Director

RISK RANKINGS

The following are notable differences between the Montana human health risk ranking and the regional ranking.

-- **Drinking Water Contamination** and **Groundwater Contamination** were ranked highest for human health risk.

-- **Lead from all Sources** was ranked relatively low overall, although there are some hot spots in Montana as a result of smelting and mining activities. Arsenic and copper may present a greater health risk than lead in Montana.

-- **Abandoned/Superfund Hazardous Waste Sites** was ranked third for health risk in Montana, which is much higher than in the regional ranking. Many of the Superfund sites in Montana are mining related.

-- **Indoor Air Pollution** was ranked much lower than in the regional ranking.

The following are notable differences between the Montana ecological risk ranking and the regional ranking.

-- **Mining Wastes** and **Abandoned/Superfund Hazardous Waste Sites** were both ranked 1st for ecological risk in Montana. This is due to the fact that many old mining sites are now Superfund sites and current mining activity presents a high ecological risk, especially cyanide operations.

-- **Industrial Discharges to Surface Water** was ranked higher by Montana. Major sources are the pulp and paper industry, oil refineries, and mining.

-- **Groundwater Contamination** was ranked higher due to the interrelationship with surface water quality

GOALS AND STRATEGIES

The following ideas were suggested as possible goals or strategies for Region VIII to pursue through the strategic planning initiative.

-- Emphasize ecological protection in EPA programs. One aspect is that tourism and recreation are increasingly important industries that can be severely impacted by ecological degradation.

-- More flexibility from EPA so that states can address their priorities.

-- Increase cooperation at the staff level. Work to improve relationship between EPA and state staff.

-- Work to improve accountability measures. "Beans" and EPA staff performance standards drive too many decisions.

-- Incorporate cross-regional and international issues into Region 8 planning.

-- There is a need for better communication/coordination among different program offices in Region 8.

-- Work to address water quality problems that are due to changes in water quantity.

-- Work with states to deal with new federal regulations that are being imposed without any resources to implement them.

-- More attention to emergency response needs of small communities. They currently lack expertise and equipment, and long response times pose a serious threat.

-- Work to improve environmental education at all levels - industry, politicians, children, etc. Focus on issues that may pose high risk but public is unaware of (i.e., indoor air pollution).

-- Better coordination of tribal environmental management. Work to overcome turf issues and get down to solving problems.

WYOMING

ATTENDEES

Dennis Hemmer, Director, Department of Environmental Quality
Chuck Collins, Administrator, Air Quality Division
Bill Garland, Administrator, Water Quality Division
David Finley, Supervisor, Solid Waste Program
Larry Robinson, Water Quality Division
Mike Hackett, Water Quality Division, Construction Grants
Beth Pratt, Water Quality Division, Nonpoint Sources
John Wagner, Water Quality Division, NPDES
Pat Godsil, Dep. Director, Region VIII Hazardous Waste Mgmt. Div.
David Wann, Region VIII Policy Office
Patrick Cummins, Region VIII Comparative Risk Project Director

RISK RANKINGS

Wyoming DEQ staff did not feel that the risk ranking approach used in the Region VIII comparative risk project was a particularly useful approach, and therefore they did not complete a similar ranking of the issues. They did agree to prepare a list of priorities that is based on the adequacy of existing programs and areas they would address given additional resources. They pointed out the following aspects of the regional risk ranking approach that limit its usefulness.

-- In the regional rankings, high ranking issues are primarily those for which EPA has no program or the existing program is inadequate.

-- The comparative risk methodology does not address the question of what would happen to the risks associated with lower ranked issues if current levels of control were lessened.

-- The methodology does not define risk broadly enough - some important effects are not included. Emphasizes cancer too heavily.

GOALS AND STRATEGIES

The following ideas were suggested as possible goals or strategies for Region VIII to pursue through the strategic planning initiative.

-- Limit "micro-management" by EPA and increase technical assistance. Specific areas where increased technical assistance would be helpful include: air toxics, ambient monitoring for nonpoint source surface water pollution, indoor air pollution and radon; and RCRA.

WYOMING (cont.)

-- Address the need for better communication between EPA programs - regulations are overlapping and conflicting.

-- "Is risk assessment the right scope to aim the gun and pull the trigger?" Need to consider many other important factors and/or define "risk" much more broadly. Talk in terms of identifying most serious environmental problems instead of highest risks.

-- Need to focus on high risk areas without cutting back on existing programs which are already inadequate/underfunded at the state level.

COLORADO

ATTENDEES

Tom Looby, Asst. Director, Colorado Department of Health
Dave Shelton, Director, Waste Management Division
Brad Beckham, Director, Air Pollution Control Division
Dr. Ellen Mangione, Director, Disease Control & Epidemiology Div.
Gary Broetzman, Office of Health and Environmental Protection
Gary Jessen, Office of Health and Environmental Protection
Kate Kramer, Office of Health and Environmental Protection
Representatives from Radiation Control Division and Water Quality Control Division were also present
Max Dodson, Director, Region VIII Water Management Division
Don Patton, Chief, Region VIII Policy Office
Patrick Cummins, Region VIII Comparative Risk Project Director

RISK RANKINGS

The following changes to the regional rankings were suggested to more accurately reflect the risks in Colorado.

For the human health risk ranking:

-- **Criteria Air Pollutants** up to category 1

-- **Drinking Water Contamination** up to category 2

-- **Groundwater Contamination** up to category 3

-- **Accidental Releases** higher, possibly category 2 or 3

-- **Pesticides** down to category 3

For the ecological risk ranking:

-- **Mining Wastes** up to category 1, particularly because of the link with **Nonpoint Surface Water Pollution**

-- **Groundwater Contamination** up to category 2 - tremendous value as a water supply for the future, needs to be protected, limited work to date.

-- **Visibility Degradation** is an extremely important issue in Colorado (probably category 1), both in urban areas as well as in the mountains. Not really an ecological issue, but certainly an environmental issue.

-- **Accidental Releases** higher, probably category 3

-- **Physical Degradation** issues are not category 1 for Colorado, probably category 2.

-- Need to include as a high priority an issue related to open space and recreation opportunities.

GOALS AND STRATEGIES

The following ideas were suggested as possible goals or strategies for Region VIII to pursue through the strategic planning initiative.

-- Reexamine state oversight pilot projects undertaken by Region VIII in the last couple of years. Need to keep up the emphasis in this area, look at the possibility of reducing/ redefining EPA's oversight role.

-- Need to take more risks in our decision-making process. Can't always require more and more information before action is taken.

-- Pursue creative approaches to solving problems - be willing to try something new as opposed to doing it the same way every time.

-- Start addressing regional and state priorities now - should not be waiting until FY93. Need to bring in mid-level managers now and get them working towards these goals.

-- SEA needs to reflect more of a partnership - What are EPA's commitments? Currently very one-sided.

ATTACHMENT D

EPA REGION VIII

COMPARATIVE RISK PROJECT

SUMMARY REPORT

November 1990

Prepared by:

Region VIII Policy Office

TABLE OF CONTENTS

EXECUTIVE SUMMARY

As part of EPA's strategic planning initiative, Region VIII conducted a comparative risk project from April through November 1990. The purpose of this project was to identify the most important environmental issues in the region based on the relative level of human health and ecological risk posed by each issue. Regional EPA staff on the Comparative Risk Advisory Council directed the project with assistance from a contractor and the Region VIII Policy Office.

The information and conclusions in this report, including the final rankings for human health and ecological risk (Table 1), are based primarily on the work of the Region VIII Comparative Risk Advisory Council, other EPA staff, and the contractor, but also reflect input from state environmental managers received during an intensive effort at state involvement carried out during the last two months of the project.

Given the results of previous comparative risk projects, this project provided little new insight into the relative severity of environmental problems. During the course of the project, EPA and state personnel pointed out the following shortcomings of the approach and made suggestions for how it could be improved in the future.

1) The concept of "residual risk" (current risk given existing controls) biases the rankings in favor of areas where EPA has limited programs or no programs at all. Future comparative risk work should simultaneously address the fact that cutting back on program activity for lower ranked problem areas will lead to increased risks.

2) The issue definitions used for the project do not provide a sound basis for analysis of environmental problems. There is tremendous overlap between issues that makes it difficult to sort out the importance of different aspects of the problems and leads to a great deal of confusion in the analysis and rankings. Also, the issue list requires comparison of natural resources, pollution sources, specific pollutants, and effects of pollution. This limits the usefulness of this approach for comparing the relative severity of environmental problems. In the future, issues should be defined consistently and in a way that minimizes the overlap between issues.

3) The analytical framework does not account for important risk factors that are necessary to determine the most serious environmental problems. By focusing on "end-of-the-pipe" pollution, the analysis does not capture elements of the problems that, if they were included, would lead to a different conclusion. A life-cycle perspective combined with a more logical issue definition would provide insights that do not show up here.

TABLE 1

FINAL RANKINGS OF ENVIRONMENTAL PROBLEM AREAS
(Include State Input)

HUMAN HEALTH RISK	ECOLOGICAL RISK
Category 1	Category 1
Indoor Air Pollution and Radon	Nonpoint Surface Water Pollution
Criteria Air Pollutants	Ozone Depletion & Climate Change
Pesticides	Physical Degradation of Wetlands and Aquatic Habitats
Category 2	Category 2
Drinking Water Contamination	Physical Degradation of Terrestrial Habitats
Groundwater Contamination	Pesticides
Lead from all Sources	Mining Wastes
	Groundwater Contamination
Category 3	Category 3
Ozone Depletion & Climate Change	Abandoned/Superfund Waste Sites
Hazardous/Toxic Air Pollutants	Ind. Discharges to Surface Water
Radiation other than Radon	Municipal Wastewater Discharges
Storage Tanks	Municipal Solid Waste
	Industrial Solid Waste
Category 4	Category 4
Abandoned/Superfund Waste Sites	Criteria Air Pollutants
Mining Wastes	Acid Deposition & Visibility Deg
RCRA Hazardous Waste	Accidental Releases
Municipal Solid Waste	RCRA Hazardous Waste
Industrial Solid Waste	Storage Tanks
Accidental Releases	
Ind. Discharges to Surface Water	
Category 5	Category 5
Nonpoint Surface Water Pollution	Radiation other than Radon
Municipal Wastewater Discharges	Lead from all Sources
	Hazardous/Toxic Air Pollutants

1.0 OVERVIEW

1.1 BACKGROUND

In November 1989, EPA headquarters outlined the main features of its strategic planning initiative which gives the regions an expanded role in the Agency's planning and budgeting process. This expanded role gives the regions more flexibility to address issues that are not adequately emphasized in national program strategies, and it is part of the Administrator's commitment to ensure that EPA management systems allocate budgets as a result of risk-based planning that involves the regions. The first phase of the strategic planning initiative was for each of the seven regions that had not completed comparative risk projects to do so in FY 90. The purpose of these projects was to identify the most important environmental issues in the regions based on the relative level of human health and ecological risk posed by each issue. This report documents the results of the Region VIII Comparative Risk Project.

The Region VIII Comparative Risk Project involved EPA and state personnel in a dynamic process from April through November 1990. The project was directed by the twelve-member Region VIII Comparative Risk Advisory Council, made up of managers and key staff from each division and office in Region VIII. The advisory council was responsible for defining the issues to be analyzed, approving the analytical approach, reviewing the results of the analysis, and performing the preliminary risk rankings. Their conclusions were then presented to Region VIII senior staff and state environmental managers as part of an intensive effort to obtain state input in this first phase of the strategic planning initiative.

Region VIII senior staff were involved in the project from the start, and the project design was based on their guidance. State environmental directors were also involved early in the process. At the state directors' meeting on May 4, 1990, a presentation on the project was given by EPA staff, and options for state input were discussed. Due to the logistical problems of involving state staff in a region as large as Region VIII, it was decided that the most practical way to involve the states was to give them an opportunity to review and comment on the results of the project after the advisory council had reached their conclusions.

Overall management of the project was performed by staff from the Region VIII Policy Office, and contractor support was provided by Don Peterson and his associates at RCG/Hagler, Bailly, Inc. in Boulder, Colorado.

1.2 ISSUE DEFINITION

The list of environmental problem areas used for the Region VIII Comparative Risk Project was derived almost entirely from the "Core List" provided by headquarters to each region. The following minor changes to the list were made to address regional concerns and areas where the advisory council thought the headquarters' list was deficient.

-- Criteria air pollutants were aggregated into one problem area.

-- Acid deposition and visibility degradation were added as a separate problem area.

-- Mining wastes were added as a separate problem area.

-- Lead from all sources was added as a separate problem area.

-- Climate change and ozone depletion were added as a separate problem area. (These issues were included on the headquarters' list as optional problem areas.)

1.3 RISK ANALYSIS

The risk analysis for the project was prepared by a contractor with assistance from members of the advisory council and numerous other regional EPA staff. The complete analysis can be found in the risk reports which were published as a separate document accompanying this report.

Realizing that time and budget constraints would make it impossible to do a comprehensive analysis of the health, ecological, and welfare risks associated with the twenty-three environmental problem areas being considered, the advisory council agreed that the analysis should concentrate on the areas where it would add the most value. Therefore, the first step in the process was to conduct a screening-level analysis of each issue in order to determine the optimal allocation of time and resources. Based on the results of this screening, more analytical effort was spent on areas that: 1) were not already well understood; 2) were expected to be of special regional significance; 3) had enough data available to do a reasonable analysis; and/or 4) were associated with a relatively high level of uncertainty.

Furthermore, it was decided that attempting to reach quantitative, deterministic conclusions was not practical for most of the problem areas. Doing so would have required making too many assumptions that could not be backed up by the available

data. It was decided that the analysis should present the information in a manner that would be most useful to the advisory council as they approached their job of conducting the relative ranking of the issues. This meant presenting information in a form that was easily understood, and it also meant not drawing any quantitative conclusions that were not defensible in light of the available data. This would allow the advisory council to make their own interpretations of the information.

With these concepts agreed to, the contractor began working with EPA and state staff in all of the program offices to collect available data. Throughout the preparation of the analysis, he worked closely with the technical experts who provided valuable guidance and assistance. The analysis relied on these sources as well as previous state and regional comparative risk assessments and national exposure response functions.

Once the analysis was completed, it was distributed to the advisory council so that they could use it to perform the risk rankings. It was also distributed to the technical staff in each program office who provided technical review and comments that were used to finalize the analysis.

1.4 RISK RANKINGS

The risk rankings completed by the Comparative Risk Advisory Council were arrived at through a three-step process. After reviewing the information presented in the analysis, council members completed ranking worksheets that had them rate each problem area on a scale of 1-5 for human health risk and 1-5 for ecological risk. Council members were asked to use the following guidelines when completing the worksheets.

1) Rank the issues based on residual risk, which is the current level of risk given existing controls.

2) Use the definitions established by the council for each issue. (See Appendix A)

3) The rankings should reflect relative comparisons between the problem areas under consideration; they do not establish any absolutes in terms of high or low risk.

4) Base the rankings on the information provided in the analysis and best professional judgement. Be conscious of uncertainties and how they influence the rankings.

5) For human health risk, consider the following criteria: 1) individual risk, which is the risk to highly exposed or particularly sensitive populations; 2) population risk; 3)

cancer risk; 4) non-cancer risks; 5) severity of non-cancer risks; and 6) persistence of pollutants in the environment.

6) For ecological risk, consider the following criteria: 1) size of affected area; 2) severity of damages; 3) reversibility; and 4) damage to sensitive or unique ecosystems.

The ranking worksheets were then tabulated to arrive at a straw ranking. This straw ranking was presented at a meeting of the advisory council and consensus was reached on the preliminary ranking of the issues. Going from the results of the worksheets to the preliminary ranking required council members to discuss their differences and come to an agreement about how the issues should be ranked. The toughest part of this process was grouping the issues in categories that represented an approximately equivalent level of risk. They ended up with five categories for human health risk and five categories for ecological risk, with category 1 representing the highest level of risk. The issues were not ranked within each category.

The preliminary rankings were then reconsidered at another meeting two weeks later. This was to give council members a chance to make any changes they felt were necessary before finalizing their rankings. However, it was decided that no changes were necessary, and the preliminary ranking was ratified as the advisory council's final ranking (Table 2).

At this time, the council also decided that it would not perform a welfare risk ranking or a combined effects ranking. While they agreed that there were important welfare risks that should be considered when addressing the issues through the strategic planning initiative, they did not think that they had enough information to do a ranking for all the issues.

The final risk rankings done by the Region VIII Comparative Risk Advisory Council were then discussed with state managers to get their judgement about how well the rankings reflected the relative risks in their state.

TABLE 2

COMPARATIVE RISK ADVISORY COUNCIL RANKINGS

HUMAN HEALTH RISK	ECOLOGICAL RISK
Category 1	Category 1
Indoor Air Pollution	Nonpoint Surface Water Pollution
Indoor Radon	Ozone Depletion & Climate Change
Pesticides	Physical Degradation of Terrestrial Habitats
	Physical Degradation of Wetlands and Aquatic Habitats
Category 2	Category 2
Criteria Air Pollutants	Pesticides
Lead from all Sources	Mining Wastes
Category 3	Category 3
Drinking Water Contamination	Abandoned/Superfund Waste Sites
Hazardous/Toxic Air Pollutants	Industrial Discharges to Surface Water
Radiation other than Radon	Municipal Wastewater Discharges
Storage Tanks	
Ozone Depletion & Climate Change	
Category 4	Category 4
Abandoned/Superfund Waste Sites	Criteria Air Pollutants
RCRA Hazardous Waste	Acid Deposition & Visibility Deg
Groundwater Contamination	Accidental Releases
Accidental Releases	RCRA Hazardous Waste
Mining Wastes	Storage Tanks
Industrial Discharges to Surface Water	Municipal Solid Waste
	Industrial Solid Waste
Category 5	Category 5
Nonpoint Surface Water Pollution	Groundwater Contamination
Industrial Solid Waste	Radiation other than Radon
Municipal Solid Waste	Lead from all Sources
Municipal Wastewater Discharges	Hazardous/Toxic Air Pollutants

1.5 STATE INVOLVEMENT

From the very beginning, Region VIII managers made it clear that they wanted a strong role for Region VIII states in the process. While it was not practical to involve state staff in the entire comparative risk project, a concerted effort to get their input was made during the last two months of the project.

A complete set of the comparative risk analysis was sent to each state for their review. Accompanying the analysis were ranking worksheets identical to those used by the Region VIII Comparative Risk Advisory Council, and state managers used them to complete their own rankings of the issues. During late October and early November, the Region VIII comparative risk project director and one member of the senior staff made a visit to each state to discuss how the risks in each state differ from the ranking completed by the advisory council. A complete write-up of these discussions can be found in the document titled "State/EPA Discussions on the Comparative Risk and Strategic Planning Initiative."

These state visits laid the groundwork for a state directors' meeting held in Keystone, Colorado on November 8 & 9. This meeting was attended by state environmental program directors and EPA senior staff, and in addition to discussing the comparative risk rankings, the group reached tentative agreement on the major strategic goal areas that the region should pursue through the strategic planning initiative. A description of these goal areas will be forwarded to headquarters with this report.

Based on the risk rankings completed by the states, the EPA and state representatives present at the Keystone meeting agreed to make some changes to the rankings completed by the advisory council. These changes are summarized below.

-- Indoor air pollution and radon remained in category 1 of the human health risk ranking but were combined to form one issue. This was done because the group did not agree that it made sense to break radon out as a singularly important indoor air pollutant when that issue includes other potentially serious pollutants like asbestos and environmental tobacco smoke. Also, many state managers think that the methodologies used to derive such high risk estimates for radon are flawed.

-- Criteria air pollutants were moved from category 2 of the human health risk ranking to category 1 due to large populations in Colorado and Utah living in areas that do not attain the federal health standards for these air pollutants.

-- Drinking water contamination and groundwater contamination were elevated to category 2 of the human health risk ranking. This recognizes the fact that these issues were ranked 1st and 2nd for human health risk in North Dakota, South Dakota, and Montana where air pollution concerns, both indoor and outdoor, are limited. It also recognizes the link between groundwater and drinking water in Region VIII states.

-- Industrial and municipal solid waste were moved from category 5 to category 4 in the human health risk ranking, and from category 4 to category 3 in the ecological risk ranking. This was done because the group felt that the analysis missed important aspects of these problems that would have been captured in a life-cycle analysis.

-- Physical degradation of terrestrial habitats was moved from category 1 to category 2 of the ecological risk ranking because the risks associated with this issue are limited in some Region VIII states, and also because the group did not believe that they were comparable to physical degradation of wetlands and aquatic habitats.

-- Groundwater contamination was moved from category 5 of the ecological risk ranking to category 2. This reflect an intense concern over preserving and protecting this invaluable resource in Region VIII states. While this is not an ecological risk in the strict sense, it certainly is an environmental risk, and the group chose to use the broader definition in this case. Like many other ecological risks, this reflects the relationship with what are usually considered welfare effects.

2.0 RISK SUMMARIES

The purpose of this section is to briefly describe the most important factors that led the Region VIII Comparative Risk Advisory Council to rank the issues the way they did. These descriptions do not reflect the changes explained in the last section that were made as a result of the state involvement process. Complete descriptions of the risks associated with each problem area can be found in the risk reports which were published as a separate document accompanying this report.

Indoor Air Pollution

(Category 1 for health; unranked for ecological)

-- High human health risk due to wide range of pollutants found indoors at relatively high concentrations. Exposure is significant considering that people spend most of their time indoors. Particularly dangerous pollutants include environmental tobacco smoke, asbestos, and pesticides. Occupational exposures to indoor air pollutants were included, and this also drove the risk ranking higher.

Indoor Radon

(Category 1 for health; unranked for ecological)

-- Concentrations of indoor radon are relatively high in Region VIII states. Risk estimates indicate a large population at high risk of lung cancer due to exposure to indoor radon.

Pesticides

(Category 1 for health; Category 2 for ecological)

-- Health risk are driven by prevalence of pesticides in the environment and numerous potential routes of exposure including household use of pesticides; pesticide application in urban environments; pesticide residue on food; agricultural workers' exposure to pesticides; and drinking water contamination.

-- Ecological risks are high due to widespread use of pesticides in Region VIII and the likelihood of impacts on non-target plants and wildlife. Pesticide use results in nonpoint source surface water pollution that can directly effect aquatic species and have a negative impact on aquatic habitat. Bioaccumulation in the food chain has been demonstrated to effect several species of wildlife.

Criteria Air Pollutants
(Category 2 for health; Category 4 for ecological)

-- Large populations in Colorado and Utah live in areas that exceed federal health based standards for particulate matter and carbon monoxide.

-- See acid deposition and visibility degradation for description of ecological effects.

Lead from all Sources
(Category 2 for health; Category 5 for ecological)

-- New information on health effects from lead show adverse effects at lower blood-lead levels. In addition to lead exposure from lead based paint, automobiles, and leaded solder, Region VIII has areas of extreme lead contamination from mining, smelting, and refining operations.

-- Ecological impacts are localized and not severe except in a few isolated cases.

Nonpoint Source Surface Water Pollution
(Category 5 for health; Category 1 for ecological)

-- High ecological risk results from nonpoint sources being a major contributor to degraded surface water quality in Region VIII. Sources include farming, ranching, mining, urban runoff, and silviculture.

-- Human health risk is low due to limited routes of exposure.

Ozone Depletion and Climate Change
(Category 3 for health; Category 1 for ecological)

-- Even with the high level of uncertainty surrounding these issues, they are believed to pose serious ecological risk. This reflects the fact that if these effects occur the damages will be catastrophic.

-- Human health risk is related to increased rates of skin cancer from exposure to ultraviolet radiation that would occur with ozone depletion.

Physical Degradation of Terrestrial Habitats
(unranked for health; Category 1 for ecological)

-- Terrestrial habitat degradation is a serious problem in Region VIII. Sources of degradation include drilling for oil and gas, mining, logging, construction, urban development, farming, ranching, and soil erosion. Among other problems, this results in habitat fragmentation and migration path blockage.

Physical Degradation of Wetlands and Aquatic Habitats
(unranked for health; Category 1 for ecological)

-- Relatively widespread destruction of wetlands from agriculture and development, and damages to aquatic habitat from alterations in the quantity and flow patterns of surface water bodies resulted in a high ecological risk ranking for this issue.

Mining Wastes
(Category 4 for health; Category 2 for ecological)

-- Although toxic pollution from mining is fairly prevalent in Region VIII, it does not result in extensive human exposure.

-- Ecological impacts from physical degradation of aquatic and terrestrial habitat, nonpoint source surface water pollution, point source discharges, and toxic contamination connected with mining in Region VIII are serious.

Drinking Water Contamination
(Category 3 for health; unranked for ecological)

-- The potential for a wide range of contaminants to be present in drinking water, along with daily exposure to the entire population, led to a fairly high human health risk ranking. Of particular concern are individuals consuming untreated groundwater as their drinking water source and the possibility of contaminants going undetected in public water supplies.

Hazardous and Toxic Air Pollutants
(Category 3 for health; Category 5 for ecological)

-- Population at risk is limited to population centers in Utah and Colorado, and even these areas are not as heavily industrialized as many other parts of the country. No demonstrated ecological effects in Region VIII.

Radiation other than Radon
(Category 3 for health; Category 5 for ecological)

-- Concern over radiation from mining and national defense related activities, especially occupational exposures. Possibility of risk to entire population from exposure to sources of non-ionizing radiation including transmitters, power lines, household appliances, televisions, and computer monitors.

-- No demonstrated ecological effects in Region VIII.

Storage Tanks
(Category 3 for health; Category 4 for ecological)

-- Ranked higher for human health risk than other hazardous waste issues because of the large number of storage tanks spread throughout the region which are currently uncontrolled and may be leaking. Program to address potential risks not as mature as for other hazardous waste issues.

-- Relatively low ecological risk since the majority of the potential ecological risks are associated with groundwater contamination.

Groundwater Contamination
(Category 4 for health; Category 5 for ecological)

-- Ranked lower for human health risk than drinking water contamination since this issue represents a subset of the total population considered under that issue.

-- Groundwater contamination was ranked very low for ecological risk due to the fact that it does not usually result in direct damage to ecosystems.

Hazardous and Solid Waste Issues

-- Ranked low for human health risk because strict regulations and existing programs minimize potential problems. Also, these facilities do not usually have a direct route of exposure to large populations.

-- With the exception of Superfund sites related to mining, these facilities do not generally pose significant ecological risks.

Municipal and Industrial Wastewater Discharges

-- Relatively low human health risk since discharges are permitted and there are very few direct routes of human exposure.

-- Ranked in category 3 for ecological risk because of adverse effects on surface water quality.

Accidental Releases
(Category 4 for health; Category 4 for ecological)

-- Ranked low for human health and ecological risk. Impacts tend to be localized and quickly remediated. Potential for catastrophic event could lead to a higher ranking for health risk.

Acid Deposition and Visibility Degradation
(unranked for health; Category 4 for ecological)

-- While surface water in Region VIII is vulnerable to acid deposition because of low buffering capacity, there have been few if any demonstrated effects to date. Sulfur loadings are low in this part of the country.

-- Visibility degradation ranks low if you consider only direct ecological risk, but ranks much higher if you interpret ecological risk to include environmental degradation. Visibility degradation, both in urban and pristine areas in Region VIII is a serious problem. Particularly important are protecting areas which currently have good visibility (Class 1 areas) and addressing pollution problems in other parts of the country that impact visibility in Region VIII states.

Appendix A
LIST OF ENVIRONMENTAL PROBLEM AREAS
FOR REGION VIII COMPARATIVE RISK STUDY

1. Industrial Discharges to Surface Water

Industrial sources that discharge effluent into surface waters through discrete conveyances such as pipes or outfalls. Does not include municipal wastewater discharges. Pollutants of concern include total suspended solids; BOD; toxic organics; toxic inorganics such as heavy metals; and thermal pollution. Typical sources include metal finishers, pulp and paper processors, and iron and steel producers. Most of these sources require permits under the National Pollution Discharges Elimination System (NPDES).

2. Municipal Wastewater Discharges to Surface Water

Includes all pollutants from public and privately owned sewage treatment facilities. Major contaminants include those found under Industrial Discharges, plus ammonia, chlorination products, and nutrients. Combined sewer overflows are included in this problem area.

3. Non-point Source Discharges to Surface Water

Sources include agricultural, urban, and industrial runoff, mining, silviculture, and public lands. Contaminants include most of the constituents of industrial and municipal point source pollution.

4. Physical Degradation of Wetlands and Aquatic Habitats

Destruction and damage of wetlands, and damages from alterations in the quantity and flow patterns of surface water bodies. Such alterations include channelization, dams, construction, irrigation systems, urban development, and dredge and fill activities.

5. Groundwater Contamination

All forms of groundwater pollution.

6. Drinking Water Contamination

Contamination of public and private water supplies (surface water and groundwater) occurs from a wide variety of sources, both natural and man-made. Additional contaminants may be introduced during the treatment and distribution of drinking water. Pollutants of concern include disinfection byproducts, pesticides, metals, radionuclides, toxic organics, and microbiological contaminants.

7. Storage Tanks

Routine or chronic releases of petroleum products or other chemicals from tanks that are above, on, or underground. Stored products include motor fuels, heating oils, solvents, and lubricants. Tanks may have air emissions, and can contaminate soil and groundwater with such toxics as benzene, toluene, and xylene. This category excludes hazardous waste tanks. Accidental releases are excluded from this problem area.

8. RCRA Hazardous Waste

Active and inactive hazardous waste facilities regulated under the Resource Conservation and Recovery Act (RCRA). These include landfills, surface impoundments, hazardous waste storage tanks, hazardous wastes burned in boilers and furnaces, incinerators, and solid waste management units. Seepage and routine releases from these sources contaminate soil, surface water, groundwater, and pollute the air. Contamination resulting from waste transportation and current illegal disposal are also included. Radiation from hazardous mixed waste is included here as well as under the radiation problem area.

9. Abandoned/Superfund Hazardous Waste Sites

Abandoned hazardous waste sites and those covered under the Superfund program. Sites may be on the National Priority List (NPL), deleted from or candidates for the NPL, or simply be noted by the federal government or states as unmanaged locations containing hazardous waste. Sites may contaminate groundwater or surface water, pollute the air, or directly expose humans and wildlife. There are many pollutants and mixtures of pollutants, including TCE, Toluene, heavy metals, and PCB's. Radiation from these sites is included here as well as under the radiation problem area.

10. Municipal Solid Waste

Open and closed municipal landfills, sludge and refuse incinerators, and surface impoundments. Medical and household hazardous wastes area also considered under this problem area. Groundwater, surface water, and air can be contaminated with metals, particulates, toxics, BOD, microbes, and nutrients. Contamination may occur through routine releases, soil migration, or runoff. Most sites are regulated under Subtitle D of RCRA.

11. Industrial Solid Waste

Open and closed industrial landfills, sludge and refuse incinerators, and surface impoundments. Groundwater, surface water, and air can be contaminated with metals, particulates, toxics, BOD, microbes, and nutrients. Contamination may occur through routine releases, soil migration, or runoff. Most facilities are regulated under Subtitle D of RCRA.

12. Accidental Chemical Releases

Contaminants are accidentally released into the environment in a variety of ways from production processes and transportation of hazardous materials and hazardous wastes. Human life may be jeopardized, and damage to property and the environment may occur from these intense, short term releases of toxic or flammable chemicals. Acids, PCBs, ammonia, pesticides, sodium hydroxide, and various petroleum products have been accidentally released.

13. Pesticides

Risks to human health and the environment resulting from the use of pesticides. Includes risks to individuals who apply agricultural pesticides, risks from pesticide residues on food, ecological damages from pesticides, and health effects from pesticide use in residences, public buildings, and other urban/suburban settings by both commercial firms and individuals. Some of the more dangerous substances include ethyl parathion, paraquat, dinoseb, EPN, aldicarb, and diazinon.

14. Criteria Air Pollutants

Criteria air pollutants are the six pollutants for which National Ambient Air Quality Standards (NAAQS) have been established under the Clean Air Act. These are ozone, carbon monoxide, sulfur oxides, nitrogen oxides, particulate matter, and lead. The primary sources of these pollutants are related to the burning of fossil fuels for various purposes. Other sources include fireplaces, wood stoves, forest fires, VOC sources (ozone precursors), industrial and commercial processes, and construction. These pollutants are capable of damaging human health and the environment, and can also cause economic and welfare damages.

15. Acid Deposition and Visibility Degradation

While these problems are primarily the result of air pollution being considered under Criteria Air Pollutants, they have been broken out as a separate category in order to recognize the fact that there are current efforts underway to assess and control these problems that are different from the efforts to control criteria air pollutants in urban areas.

16. Hazardous/Toxic Air Pollutants

Outdoor exposure to routine emissions of airborne hazardous air pollutants from mobile and stationary sources. Pollutants include metals, organic gases, hydrocarbons, gasoline vapors, and products of incomplete combustion. Major sources include large industrial facilities, motor vehicles, chemical plants, commercial solvent users, and other combustion sources.

17. Indoor Air Pollutants other than Radon

Sources of indoor air pollution include unvented space heaters, gas stoves, foam insulation, pesticides, tobacco smoke, wood preservatives, fireplaces, cleaning solvents, and paints. Pollutants include environmental tobacco smoke, asbestos, carbon dioxide, carbon monoxide, nitrogen oxides, lead, pesticides, and volatile organic chemicals. Occupational exposures are included, as is inhalation of contaminants volatilized from drinking water.

18. Indoor Radon

Radon gas can migrate into buildings through cracks or other openings in the foundation and can volatilize from domestic water use. When inhaled, radon decay products can cause lung cancer.

19. Radiation other than Radon

Sources of non-ionizing radiation include TV transmitters, AM/FM antennas, radar and microwave transmitters, power lines, home wiring, household appliances, televisions, and computer monitors. Sources of ionizing radiation include natural sources, Department of Energy facilities, nuclear power plant operations, medical facilities, research laboratories, mineral extraction industries, medical x-rays, air travel, and occupational exposures.

20. Mining Wastes

Health, ecological, and economic/welfare effects associated with contamination of the environment by active and inactive mining and milling sites. Includes impacts from air emissions, surface runoff, point source discharges, groundwater contamination, and aquatic and terrestrial habitat destruction. Major sources include coal mining, hard rock mining, uranium mining, sand and gravel mining, milling, smelting, and refining operations. Pollutants of concern are metals, cyanide, radionuclides, acid mine drainage, and sediments.

21. Lead from all Sources

Human health risks, and subsequent economic/welfare effects, from exposure to lead from all sources including air, soil, food, and drinking water. Lead can be found in solder, water distribution pipes, gasoline, and paint, and is emitted by mining, smelting, and refining operations.

22. Physical Degradation of Terrestrial Ecosystems/Habitats

Physical modifications (mining, logging, construction, etc.) and other sources of physical degradation that damage terrestrial ecosystems and habitats. Soil erosion, desertification, and effects on undisturbed lands that result from nearby degradation (habitat fragmentation, migration path blockage) are also included in this problem area.

23. Climate Change and Ozone Depletion

Increased atmospheric concentrations of carbon dioxide and other gases may result in global warming that would cause climate change and disrupt weather patterns. Potentially serious health, economic, and ecologic impacts are possible. Releases of chloroflourocarbons (CFCs) and other gases could significantly reduce the earth's protective ozone layer and subject humans to harmful ultraviolet radiation.

Attachment E

REGION VIII STRATEGIC PLANNING PROJECT
STRATEGIC CRITERIA AND EVALUATION MATRIX

As primary criteria to focus potential reallocation decisions in Region VIII, the following concepts are offered:

COMPARATIVE RISK: Focusing on the problems and issues that present the highest risks, while reducing investments in lower priorities, risk-wise. The Regional Comparative Risk Ranking, compiled with regional/state/contracted expertise, will serve as a guideline. (We emphasize that risk is only one of the criteria.) Regional examples are a "worst sites first," multi-media orientation in Superfund, as at Rocky Mountain Arsenal, and the work being performed at Brookhurst in Wyoming. Ecological risk is a major Regional priority, with emphasis on geographic areas of greatest vulnerability, as in Colorado's South Platte Ground Water project and Montana's comprehensive Clark Fork project.

TECHNICAL ASSISTANCE/EDUCATION: The transfer of expertise to EPA customers including states, tribes, industry and the general public. Regional examples are state/EPA sharing of TRI data, review of Denver Airport design plans, and inter-Agency cooperative efforts on water quality impacts from mining and agriculture. The Region 8 Institute and Office of External Affairs will play a strong role; Divisional expertise and outreach is critical too.

POLLUTION PREVENTION: An integrated search for alternatives that will reduce or eliminate environmental impacts and pollution. Examples are water conservation options in connection with Two Forks Reservoir, SOLVNET, the Pollution Prevention Partnership's Solvent Reduction project, Solid Waste demonstration projects throughout our states, and the regional focus on sustainable agriculture. An economic sector approach -- looking at environmental problems according to activities such as energy and agriculture -- will also be a special focus.

ENFORCEMENT: Special emphasis on targeted enforcement. Examples are the Sand Creek Initiative and the region-wide Pollution Prevention Enforcement Settlement project, in which enforcement cases will use pollution prevention as conditions of the settlement.

STATE/LOCAL/TRIBAL/EPA RELATIONS: Developing state and tribal capabilities and "appropriate oversight." Putting more emphasis on technical assistance and less on "micro-managing," and stronger teamwork at the staff level. Working toward greater fiscal flexibility at the state level, and developing full state delegation wherever feasible. Good examples are the NPDES program in Utah; and pesticides initiatives with the Turtle Mountain tribe, and in North Dakota and South Dakota.

MULTI-MEDIA PROJECTS: Focusing on inter-programatic solutions to problems that avoid shifting pollutants/impacts from one media to another. Good examples are vulnerability studies using GIS data analysis, inter-media efforts at Superfund sites throughout the Region, and multi-media inspections. These projects place a high emphasis on teamwork regionwide, with states, and with other federal agencies.

EVALUATION MATRIX

STRATEGIC CRITERIA

PROJECT/ ISSUE AREAS	Comparative Risk	Technical Assistance/ Education	Pollution Prevention	Enforcement	State/Local/ Tribal/EPA Relations	Multi-Media Projects
Area 1	X			X	X	
Area 2	X	X		X		X
et. al.	X		X			X

REGION VIII STRATEGIC PLANNING INITIATIVE:
Project/Issue Areas Under Consideration

INVESTMENTS

Build State/Local and Tribal Capabilities (e.g., IPA's to States, Toxicology, and Groundwater Assessment Skills)

Enhance Regional Expertise to Optimize Technical Assistance Through Training and "In Reach" (e.g., Pollution Prevention Audits and Innovations)

Develop Multi-Media Team Approach to Problems Using a Geographic Base (e.g., Water Quality Issues at a Superfund Site)

Focus on Mining Waste Issues From a Multi-media Perspective (e.g., Clark Fork River in Montana and Sand Creek Industrial Area in Colorado)

Increase Regionwide Awareness of Indoor Air Quality Issues

Use TRI Data to Identify Opportunities for Voluntary Pollution Prevention, Technical Innovation and Enforcement

Increase Staff and Management Effectiveness Using TQM (e.g., Reduce Duplication and Friction and Perform Tasks More Efficiently)

Focus on Sustainable Agriculture

Implement Water Conservation and Pollution Prevention at Municipal Facilities

REDUCED INVESTMENTS

Decrease State Oversight Where Appropriate

Eliminate Unnecessary Inspections, Permits, and Reviews

Reduce Activities at Lower Risk Superfund Sites

Redirect Municipal Waste Water Activities

Diminish Emphasis on Air Pollutant Standards Which We Have Attained (e.g. Ozone)