Appendix J

Environmental Monitoring Community Outreach

Rocky Mountain Arsenal Medical Monitoring Program Recommendation
Environmental Monitoring Community Outreach Program

I. **Objective:** Establish an environmental monitoring community outreach program to regularly inform people living in the areas around Rocky Mountain Arsenal (RMA) of environmental conditions related to the cleanup. The outreach program will focus on air quality issues but will also periodically address water issues. These recommendations are intended to support and enhance the overall Medical Monitoring community outreach program recommendations. The environmental monitoring community outreach program should satisfy the following objectives:

Objective 1: Provide understandable summaries of air quality information to the target communities. This presentation may include information on related remediation topics and clarifying background information on technical topics.

Objective 2: Integrate these recommendations as part of a comprehensive Medical Monitoring Program community outreach program. Avoid duplication unless it enhances communication of important information.

Objective 3: Identify means of ensuring data/information credibility. Information should be presented in an objective and unbiased fashion.

Objective 4: Employ a variety of communication tools to reach a broad audience. Existing tools should be used when possible.

Objective 5: Explore partnerships with local schools and develop educational opportunities by making resources and tools available.

Objective 6: Review the environmental monitoring outreach strategy periodically to evaluate whether it is effective. Input from community representatives should also be sought.

II. **Population to be served:** People living in the communities surrounding RMA; the same communities addressed by the other components of the MMAG program (i.e., Birth Defects Surveillance and Medical Referral programs). This could be expanded to include local public health authorities and appropriate community organizations in a broader geographic area.

III. **Expertise Required:** Health education and community involvement professionals with production (desktop publishing, web-page development and maintenance, graphics) and preparation (translating complex technical information for layperson) skills for a

variety of written materials including the community bulletin, web-page, and occasional media articles. Technical experts to provide and abstract technical data and information. Educators with the ability to develop curriculum and educational lesson plans and guide tours and workshops. Management staff to: (1) ensure that appropriate staff are made available to lead regularly-scheduled environmentally-oriented workshops and tours for schools; (2) coordinate with Air & Waste Management Association; and (3) encourage participation of local schools. The environmental monitoring community outreach program should be a collaborative effort among state, Army, EPA, USFWS and other sources of community outreach expertise such as local health departments and Shell.

IV. Strategy:

A. General Background

The *Medical Referral & Biomonitoring Decision Tree* recommends that preventing community exposure to potentially harmful levels of chemicals or nuisance odors be central to the MMAG program. This goal can be achieved through a carefully designed and implemented remediation program including, but not limited to, the following activities:

1. Computer modeling using the Interactive Comprehensive Air Pathway Analysis (IC-APA) during project design and implementation to predict on-site and fence line air impacts;

2. Atmospheric monitoring, both on-site and at the fence line, to verify predicted concentrations;

3. Comparison of measured data to established site-specific acute and chronic fence line concentrations and state odor standards and other site-specific odor intensity goals;

4. Feedback of real-time environmental monitoring data to remedial managers, charged with modification of remedial activities, and state and local officials, charged with medical monitoring oversight and public health protection. The effectiveness of preventing community exposure to potentially harmful levels of chemicals will be monitored. Failure of prevention will be responded to through remedial construction modification first, and then through implementation of individual medical referral, community biomonitoring or other public health actions, as appropriate.

To inform the community and to increase public confidence in the environmental monitoring programs, an Environmental Monitoring Community Outreach Program is

needed. The purpose of this program is to ensure that credible information about the air pathway is provided to community members during the clean up.

B. Description of Objectives

Objective *#1* - *Provide understandable summaries of air quality information to the target communities. These summaries may include information on related remediation topics and clarifying background information on technical topics.*

Air quality data is the primary information necessary to communicate to the public during clean up activities from the perspective of the Environmental Monitoring Working Group. In order for this information to be meaningful, it must be communicated in a straightforward and non-technical format. Acronyms and technical jargon should be minimized.

Bulletin

The primary format for dissemination of the information should be a periodic bulletin produced by Colorado Department of Public Health and Environment. Additional resources and expertise may be provided by the other RMA parties (i.e., mailing lists, graphics support, use of existing Army vendors for printing or mailing). If the Public Involvement and Education (PIE) recommends using a bulletin as a communication tool for other components of the program, one comprehensive bulletin should be used for economy and to avoid "information overload". The comprehensive bulletin should be no more than four pages and should use a magazine format. The bulletin should be printed on recycled paper to reduce resource utilization. It should also be presented in both English and Spanish formats in order to be more inclusive of all targeted communities. Examples are available from other sites such as Rocky Flats (see Attachment 1).

Data Presentation: Data presentation should use simple charts and graphs for presentation of data. It should also explain what the data mean to the community compared to relevant fence line concentrations, other common daily exposures or site air quality data collected during other measurement intervals. If problems are noted at the fence line for excesses of contaminants or odors, include information on actions taken to address the problems.

Regular Features: A regular feature of the bulletin should be the Tri County Health Department (TCHD) odor reporting hotline number associated with an eye-catching graphic. It should also include contact(s) and phone numbers for questions and concerns regarding the clean up. Other regular features could be a "Frequently Asked Questions" Question & Answer column, an informative article on a

selected "technical" topic (see Attachment 2) and a profile of individual members of the MMAG.

Objective #2 - *Integrate these recommendations as part of a comprehensive program community outreach program. Avoid duplication unless it is enhances communication of important information.*

The Environmental Monitoring Subcommittee recommends this Environmental Monitoring Community Outreach Program be incorporated by the PIE Subcommittee into its comprehensive communication strategy for the RMA Medical Monitoring Program.

Objective #3 - *Identify means of ensuring data/information credibility. Information should be presented in an objective and unbiased fashion.*

MMAG community members have indicated that the credibility of the air quality data interpretation and presentation is of utmost concern. Some community members have stated that none of the five parties involved in the RMA clean up are perceived as being completely un-biased.

In this regard, data quality should be addressed separately from data presentation. The laboratories analyzing the air data are audited regularly. If desired, the fact that data is audited could be footnoted on the bulletin. In addition, the Quality Assurance/Quality Control process for environmental data is suggested as a technical topic for an early bulletin.

In terms of data presentation, the Environmental Monitoring Subcommittee's *Environmental Monitoring Data Presentation Techniques* recommendation provides an example of a general objective and effective presentation technique.

Objective #4 - *Employ a variety of communication tools to reach a broad audience. Existing tools should be used when possible.*

The primary tool for *regular* communication will be the bulletin. While other methods such as local and high school newspapers or public speaking engagements provide another valuable means of outreach, the MMAG cannot be assured that these avenues will be available on a reliable basis. However, other means should be used when possible to reach a broader audience. Attachment 3 lists recommendations for communicating environmental monitoring data.

Objective #5 - *Explore partnerships with local schools and develop educational opportunities by making resources and tools available.*

The Environmental Subcommittee recommends a two-pronged approach for school

involvement; utilizing the Air and Waste Management Association (A&WMA) environmental education program for the school districts near the Arsenal; and enhancing the existing RMA environmental education program for school-age children.

Air and Waste Management Association Environmental Education Program

A&WMA is a nonprofit, worldwide organization for 16,000 professionals involved in air pollution control and waste management. The Association provides a forum for its members to develop programs that are designed to foster the exchange of information, enhance skills and knowledge, and increase the effectiveness of environmental management. In order to improve the environmental literacy of youth, A&WMA has developed a Teacher-Training Program, which includes curriculum development and local teacher-training workshops (see Attachment 4). A&WMA's Environmental Resource Guides (ERGs) form the core of this program; three ERGs are available: Air Quality, Water Quality, and Nonpoint Source Pollution Prevention. The workshops provide K-12 educators with opportunities to receive hands-on training in the use of scientifically accurate environmental education materials. Within the first five years of the Program, more than 2,600 educators throughout the United States, Mexico and Canada have participated in workshops taught by AWMA volunteers. The ERGs are available in both English and Spanish. ERG activities can be easily adapted to regional geographic and environmental concerns to allow the classroom teacher to develop instructional units that supplement his/her current curriculum. This could also allow for instructional units to be tailored to RMA.

RMA Environmental Education Program

United States Fish & Wildlife Service (USFWS) conducts educational programs at RMA for school age children. Most of these programs are wildlife oriented but some are related to ground water contamination and other environmental topics. The Environmental Monitoring Group recommends that this program be expanded to include emphasis on environmental topics, either through USFWS or by using other environmental or public health experts. The Service supports expanding the emphasis on environmental topics as long as the topics are consistent with the Refuge's environmental education and interpretation storyline and education principles as identified in the Refuge Comprehensive Management Plan. This program should be customized to enhance the benefit of the A&WMA teacher-training workshops for participating schools. For example, after the appropriate teaching staff at a school receives its Air Quality ERG Training, the students of those educators could visit an RMA air quality and meteorology monitoring station and learn more about the real-world application of the scientific principles. This could be supplemented with a short lecture and related demonstrations. Likewise for

the Nonpoint Source Pollution Prevention ERG, the teachers and students would learn about various water quality topics, then visit an RMA water treatment facility. The students would receive an explanation of the RMA contamination and remediation efforts, then learn about water treatment methods and basic air monitoring technology.

For the higher grades, portions of the RMA environmental data base could be made available electronically to schools, if desired, for class projects involving data manipulation and interpretation. This could augment what is learned through the ERG RMA workshops and serve as an instructional unit that supplements the teacher's current curriculum.

USFWS at RMA has already established a partnership with Hansen Elementary School and Montbello High School may also be interested in a similar arrangement. The Environmental Subcommittee recommends that additional partnerships with local schools in the immediately adjacent communities be pursued.

Objective #6 - *Review the environmental monitoring outreach strategy periodically to evaluate whether it is effective. Input from community representatives should also be sought.*

Public outreach programs should be subjected to regular review to ensure that they are effective. Since the RMA remediation is expected to occur over a 14-year period, community information needs may change from the time the environmental monitoring community outreach recommendations are first implemented until the clean up is complete. Public interest may be very high as the clean up begins and taper off in later years. On the other hand, public interest may heighten as the Army begins operations in the areas of higher contamination during the mid and later phases of clean up. The Army's sequence of clean up projects generally begins with soil sites that have lower potential for air emissions and odors in the early years and then tackles the more complex areas.

The environmental monitoring outreach program can be tailored appropriately after implementation through consultation with health education and community involvement professionals, collecting input through community representatives and applying experience gained from the early implementation efforts of the school partnerships program.

Attachment 1

Example of a Representative Community Bulletin

UPDATE

WINTER 1992
VOL. 2, NO. 1

Health Studies on ROCKY FLATS

P H A S E 1

Detailed history of plant released

A Rocky Flats history, covering operations from the nuclear weapons facility's start-up in 1952 through the end of 1989, will be released this month for public review and comment.

The historical record is the foundation for the health studies, which will provide the community with information about past offsite releases and how they might have affected public health.

ChemRisk, the environmental consulting firm that is conducting the first phase of the Rocky Flats health studies, compiled this extensive plant history. According to Steve Ripple, ChemRisk project manager, the report is the most thorough record to date of the who, what, where, why, and when of historical plant operations.

The Health Advisory Panel overseeing the studies believes that some important information could still be missing. Readers who have personal knowledge of Rocky Flats and can clarify or expand on this historical record are invited to come forward. Please call Ann Lockhart of the Colorado Department of Health at (303) 331-8792 if you have additional information or insights. She will have a ChemRisk staff member contact you to arrange a meeting at the plant site or another location.

The Rocky Flats history presents factual information drawn from existing sources without making interpretations about the results. It sheds light on past plant operations as well as the uses of chemicals and radionuclides at the facility. ChemRisk focused on identifying past practices or incidents that may have resulted in offsite release of materials from the plant.

Highlights of the report include: (1) a list of incidents that may have resulted in offsite releases, (2) detailed profiles of how plutonium, uranium, and other materials were used at the plant over time, (3) the emission

Please see **HISTORY** *on page* **4**

HIGHLIGHTS OF THE REPORT

1. A list of incidents that may have resulted in offsite releases
2. Detailed profiles of how plutonium, uranium and other materials were used at the plant over time
3. The emission sources
4. Estimated quantities of 20 chemicals and five radionuclides identified as materials of concern*

*The pesticide/herbicide group was added to the list of 20 chemicals released in September.

WE NEED YOUR INPUT

Public Meetings:
Wednesday, February 26 & Tuesday, March 31
6 to 8 p.m.
Ramada Hotel
8773 Yates Drive
Westminster

Come to the February 26 information session to hear an overview of the Rocky Flats history and the status of other study tasks. Take home a copy of the complete report to review. Give us your input at the question and comment session on March 31, or any time by mail, phone or fax.

ENSR chosen to assist with risk communication

From the very beginning of the Rocky Flats health studies, open and direct communication with the public has been a top priority for the Colorado Department of Health and the Health Advisory Panel.

Encouraging active participation by people familiar with the plant, such as employees and neighbors, is critical to understanding the facility's history and possible health impacts. In turn, the community needs clear, meaningful feedback on study progress and results.

ENSR Consulting and Engineering, a full-service environmental consulting firm, was selected from among six firms to help develop and carry out an expanded public involvement and education program to achieve the health studies goals for two-way communication.

ENSR was selected for the firm's expertise in communicating complex technical and health issues and its familiarity with the local issues. The company has had an office in Ft. Collins for more than 20 years.

Suzanne Zoda, ENSR's project manager, lived in Boulder for 10 years and has 12 years of experience in environmental communications. Ms. Zoda's expertise includes risk communication and developing community relations programs for hazardous waste sites.

ENSR will work closely with CDH and the Health Advisory Panel to communicate the progress and results of Phases 1 and 2 of the Rocky Flats health studies in a clear, nontechnical way and to encourage citizen participation.

Merle Lefkoff and Associates will continue to facilitate public meetings, pending her availability. Please contact Ann Lockhart with your public outreach ideas at (303) 331-8792.

ENSR

ENSR's Role:

- Help establish an ongoing public involvement program
- Create publications to provide the community with information
- Establish a program to help local physicians and health care providers communicate accurate health risk information to patients
- Keep the media up-to-date on the studies

COLORADO
DEPARTMENT
OF HEALTH

Steve Ripple is ChemRisk's project manager on the Rocky Flats health study

Challenges in compiling plant history

By Steve Ripple

Compiling a history of the Rocky Flats plant presented enormous challenges to the study team. Over the past 18 months, we searched plant records, reviewed numerous documents and talked to many Rocky Flats employees. The result is a 300-page report that provides an in-depth profile of operations and materials used at the plant during its 40-year history, accidents and incidents, and sources of emissions from the facility.

This general history of the plant, the first of its kind, will be one of the most important contributions of the Toxicologic Review and Dose Reconstruction Project. We hope it will serve to further public understanding of historical operations at the facility.

Our biggest challenge was to go back in time and describe how processes and facilities have changed over the years as different materials were used and better technology became available. This effort was hampered by an incomplete record of materials used at the plant from the 1950s and 1960s. During those years, there were far fewer regulations requiring recordkeeping. In comparison, there are many more records for the past 20 years, a period of time that coincides with the advent of many state and federal environmental statutes.

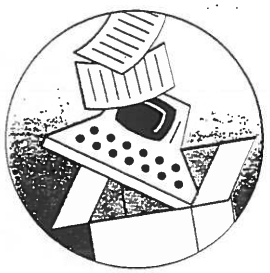
To compensate for the lack of written records, ChemRisk investigators interviewed more than 70 individuals with a combined total of over 1,500 years of experience at the plant. Interviewees included current as well as retired employees, local citizens and other interested parties. We are still seeking input from individuals with additional information to improve our study results.

Reviewing the written record presented a challenge due to the sheer number of documents. Our team members reviewed tens of thousands of document entries, sorted through thousands of boxes of records and searched several computerized information management systems.

Records are kept at several different locations at the plant. One of the main repositories is the Building 706 Technical Library. Three members of the historical investigation team independently reviewed a 1,200-page classified document index containing approximately 64,000 entries in its entirety as well as an unclassified report index consisting of six volumes of entries. The index lists documents by "keywords," such as names of chemicals and radionuclides, fires, accidents and exposure incidents. The most heavily documented keyword, for instance, was "beryllium," which had 689 entries.

The records search took the ChemRisk team to several other locations at the plant. The Environmental Master File, for instance, consists of two electric-powered horizontal file machines

Please see **CHALLENGES** *on page* **4**



"Our team members reviewed tens of thousands of document entries, sorted through thousands of boxes of records and searched several computerized information management systems."

UPDATE

The Colorado Department of Health publishes **UPDATE** several times a year to provide community leaders and interested citizens information about the Rocky Flats health studies.

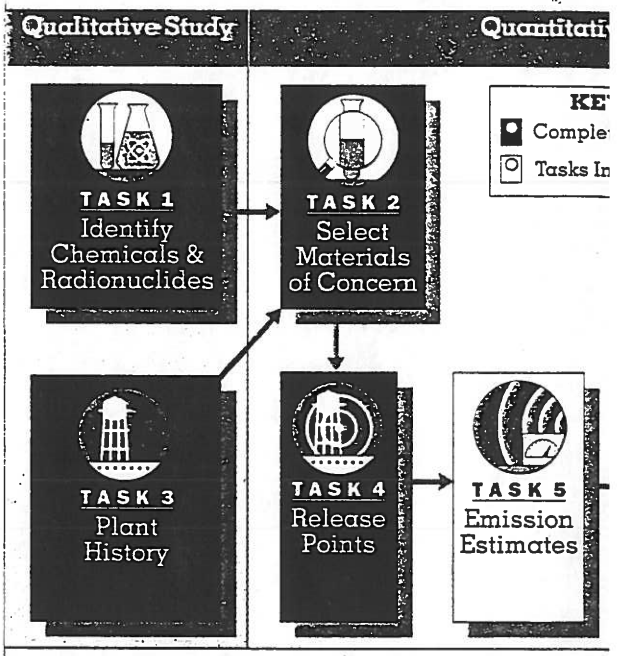
Project Manager:
Norma C. Morin, Ph. D., M.P.H.

Senior Public Information Officer:
Ann J. Lockhart, M.S.S.

Staff Assistant:
Kathleen Bogert

Address:
Colorado Department of Health
Disease Control and Environmental Epidemiology Division
4210 E. 11th Ave.
Denver, CO 80220
Phone: (303) 331-8792
Fax: (303) 322-5390
Please call to be added to our mailing list or to change your address.
Prepared by ENSR Consulting & Engineering

Progress on Dose Re



Study progress reported

ChemRisk has made considerable progress on the eight technical tasks of the Rocky Flats dose reconstruction, with the completion of Tasks 3 an an work underway on Tasks 5, 6, and 7. The other f tasks in the Toxicologic Review and Dose Reconstructior provide for data management, project documentation, scientific oversight and public involvement.

For Task 1, ChemRisk identified more than 7,500 chemicals and product names, and more than 50 radioactive materials that were used at the Rocky Flats Plant since 1952.

In Task 2, ChemRisk focused on those chemicals and radionuclides most likely to cause possible offsite healt impacts in light of their past use at the plant. Five

Public continues to provid

Here are ChemRisk's responses to some of the questions as

"Does the list of materials of concern include pesticides and herbicides?"

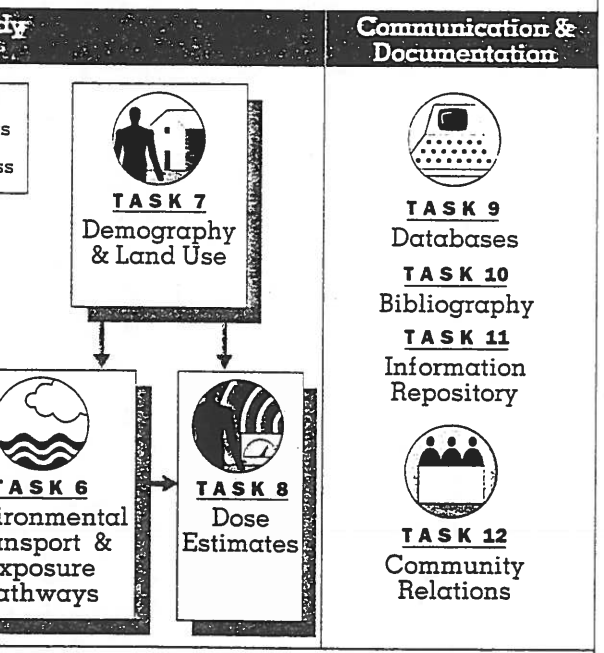
"How will you evaluate the available ground water data?"

"What do you know about the risks related to wastes shipped to the plant?"

"How will you handle uncertainties in the stu ?"

"Where can a person read ChemRisk's draft document and reports?"

tion Tasks



dionuclides and 20 chemicals were initially identified materials of concern. The pesticide/herbicide group s identified as a separate category of substances for ther study.

3 and 4 involved reconstructing the history of ats plant operations, accidents and incidents and tential emission sources of the chemicals and lionuclides of concern. The findings are summarized in emRisk's latest report, "Rocky Flats History". Work has started on estimating source terms uantities released from specific emission sources) for sk 5 and on evaluating environmental transport and posure pathways for Task 6. Task 7, identifying pulation groups that may have been affected, is nearly mplete. Task 8 will provide the final results of Phase 1, se estimates.

eaningful input

he last Health Advisory Panel meeting on Sept. 25, 1991:

Pesticides and herbicides were added to the list of materials of concern. This group of substances is a special challenge for investigators because they were storically applied by outside parties not associated with he plant. However, ChemRisk will separately evaluate their potential to cause offsite health hazards.

ere is a general consensus that currently available data o not indicate that contaminated ground water from the lant has reached beyond plant boundaries. Much more ground water data will be collected and evaluated in the coming years.

date, ChemRisk has not identified any instances where wastes shipped to the plant have been associated with public exposures.

n possible, ChemRisk will identify and quantify certainties in each step of the analysis and will include a presentation of uncertainties in study results.

Copies of ChemRisk's documents and reports are available for public review at three locations listed on page 4 of this Update

12-Member Health Advisory Panel

Ellen Mangione, M.D., M.P.H., currently at the University of Colorado Health Sciences Center on an internal medicine fellowship to become board-certified, will return in July from her one-year leave of absence as director of the Disease Control and Environmental Epidemiology Division of the Colorado Department of Health;
Eugenia "Bini" Abbott, a citizen representative from Arvada, Colorado;
David Albright, M.S., of the Science and Policy Analysis Unit of Friends of the Earth of Washington, D.C.;
Franklin Gifford, Ph.D., an internationally-recognized consultant on atmospheric diffusion and environmental pollution from Oak Ridge, Tennessee;
Robert Goldsmith, Ph.D., acting director of the Office of Epidemiology and Health Surveillance of the U.S. Department of Energy headquarters in Washington, D.C.;
F. Owen Hoffman, Ph.D., a nationally-recognized expert and scientist with the Environmental Sciences Division of Oak Ridge National Laboratory, Tennessee;
James M. LaVelle, Ph.D., formerly a toxicologist for the U.S. Environmental Protection Agency, has joined Camp, Dresser and McKee, an environmental consulting firm;
Kenneth A. Lichtenstein, M.D., of Denver, national president of the Physicians for Social Responsibility;
Robert M. Quillin, M.S.P.H., M.S., director of the Radiation Control Division of the Colorado Department of Health;
Niels D. Schonbeck, Ph.D., chemistry professor at Metropolitan State College in Denver;
James M. Smith, Ph.D., chief of the Radiation Studies Branch at the Centers for Disease Control in Atlanta, Georgia; and
Henry A. Stovall, engineer and councilman for the City of Broomfield, Colorado.

PANELIST PROFILES

Name: Bini Abbott
City/State: Unincorporated Jefferson County
Occupation: Rancher, horse breeder, hay farmer
Family Status: Married, two children
Interests: Actively crusades to **(1)** protect riparian habitat along ditches; **(2)** preserve the "Two Ponds" wetlands area in Arvada; **(3)** monitor development of Highway W-470. Also volunteers with Colorado Horse Rescue and enjoys nature photography.
Background: B.A. in education; former elementary school teacher;

Bini Abbott

has real estate license (inactive status).
Special skills/ abilities/experience: Trained horses and riders for world championships.
Her contribution to the health studies: "I have lived next to Standley Lake since 1960 and have an ongoing interest in Rocky Flats and its impact on neighbors and the environment; I hope to act as a fairly unbiased conduit between the scientific experts on the panel and the general community."
What she wants from interested citizens: Provide input, voice concerns and recognize the panel's dedication to overseeing the health studies.

Name: Franklin A. Gifford
City/State: Oak Ridge, Tennessee
Occupation: Meteorologist (retired)
Family Status: Married; two sons
Interests: Arranging choral music and collecting 19th century American art
Background: Ph.D. in meteorology; involved with nuclear siting and safety studies since 1951; served 10 years on the Nuclear Regulatory Commission's Advisory Committee on Reactor Safeguards; served as consultant on reactor siting and safety to the International Atomic Energy Agency from 1967 to 1982.

Franklin A. Gifford

Special skills/ abilities/experience: Developed basic methods to calculate atmospheric turbulence and dispersion of air pollutants; studied such things as why stars twinkle (effect is related to high winds in the upper troposphere) and the atmosphere of Mars; organized and directed the National Oceanic Atmospheric Administration's Atmospheric Transport and Diffusion Laboratory in Oak Ridge.
His contribution to the health studies: "Apart from working for 40 years on nuclear facility safety, I suppose my general familiarity with the atmospheric aspects of radioactive contamination is most important."
What he wants from interested citizens: Mutual respect for opinions.

History

Continued from page one

sources and (4) estimated quantities of 20 chemicals and five radionuclides identified as materials of concern. The pesticide/herbicide group was added to the list of 20 chemicals released in September.

The ChemRisk team members were given access to all areas of the plant and to all information sources they requested, including classified and unclassified records. Some information was not available, however, since the government did not require chemical inventories prior to 1970. ChemRisk augmented the written record by conducting interviews with more than 70 current or former employees.

Challenges

Continued from page two

totalling 25 six-foot-long shelves. The Building 881 Archives house approximately 2,500 cardboard boxes containing original hand written notebooks, data sheets, memos, letters and rough draft reports.

We also searched several offsite information repositories including the Denver Federal Records Center, which contains a total volume of about 3,237 cubic feet of Rocky Flats documents, and files at the Colorado Department of Health.

Even with the extensive document review and interviewing effort, ChemRisk did not find any information about previously unknown major plant accidents. However, we did find reports of small release incidents about which the public may not have known, such as a glove box drain fire and an accidental burning of depleted uranium sheets. Neither of these incidents, which occurred in 1965, are believed to have had a significant potential for offsite impact.

Even though we applied a systematic approach to compiling a comprehensive history of information essential to the health studies, it is still possible that something relevant could have been overlooked. Please attend the next public meeting, review the historical report, and let us know if you have questions or comments.

INFORMATION LOCATIONS

Colorado Department of Health
Disease Control and Environmental Epidemiology Division
3773 Cherry Creek North Drive, Suite 235
Denver, CO
(303) 331-8702
Hours: Monday - Friday 8 a.m. - 5 p.m.
(Please call for appointment)

Rocky Flats Public Reading Room
Front Range Community College Library
3645 West 112th Avenue
Level B, Center of Building
Westminster, CO 80030
(303) 469-4435
Hours: Monday, Tuesday 12 p.m. - 8 p.m.
Wednesday 10 a.m. - 4 p.m.
Thursday, Friday 8 a.m. - 4 p.m.

Rocky Flats Environmental Monitoring Council
1536 Cole Boulevard, Suite 325
Denver West Office Park, Building 4
Golden, CO 80401
(303) 232-1966
Hours: Monday - Friday 8:30 a.m. - 5 p.m.
(Please call for appointment)

TERMS

ENVIRONMENTAL TRANSPORT: The mechanisms by which substances can be carried from their source to a point of human or animal exposure, such as air or wind dispersion, surface water runoff, soil contamination or ground water movement.

EXPOSURE PATHWAY: The means by which living things can come into contact with toxic substances, such as breathing, drinking, eating or skin contact.

MATERIALS OF CONCERN: The chemicals and radionuclides identified as most likely to cause health effects as a result of past use at the facility.

SOURCE TERMS: The estimated quantities of chemicals and radionuclides released from identified sources or from incidents at the facility.

Printed on Recycled Paper

Health Studies on ROCKY FLATS
PHASE 1

Public Meeting February 26
More Inside

Colorado Department of Health
4210 E 11th Ave.
Denver, CO 80220

UPDATE

Attachment 2

Examples of Technical Topics for Community Bulletin

Examples of Technical Topics for Community Bulletin

In Field Monitoring - If an air monitoring device is placed in the community, describe the location of the monitor, the chemicals it samples, non-RMA potential sources of chemicals, etc.

Laboratory Analysis and Limitations - Include simple descriptions of the various analytical procedures that are required for the types of pollutants being sampled at RMA. Include information on the sample analysis procedures and the limitations surrounding detection limits and turn around times. Describe real time instruments and their limitations (types of chemicals analyzed, detection limits) versus instruments that collect samples to be analyzed in a laboratory.

Data Quality Assurance/Quality Control - Provide information regarding the quality assurance and quality control program which is designed to ensure the integrity and accuracy of the data. This topic addresses one of the credibility issues about which the community is concerned. By way of example, indicate that quality control is the "system of activities to provide a quality product", while quality assurance or quality assessment is the "system of activities to provide assurance that the quality control systems is adequate and effective."

Air Pathway Analysis - Describe the components of the Interactive Comprehensive Air Pathway Analysis (IC-APA) created for RMA. Include information about estimating emissions from RMA soil and dispersion (windborne dispersion) modeling. Show how this information impacts design and construction activities.

Odor Monitoring and Reporting - Describe how odors are measured. Provide information on the TCHD offpost and Army onpost odor response capabilities. Describe how TCHD responds to complaints and how responders can differentiate between various odor sources (including information on the meteorological network coordinated by TCHD). Provide information on the types and numbers of odor complaints.

Data Management - Describe the capabilities of the RMA electronic data base; the amount of air data collected, the geographic information systems (GIS) capabilities, etc.

Human Exposure Information - Provide basic information on how contaminants can enter the body with emphasis on air pathway exposure. Build a framework for why the environmental monitoring results are important and relevant to the surrounding communities and why the health departments, EPA and community advisory groups are involved.

Attachment 3

Additional Approaches for Communicating Environmental Monitoring Data

Additional Approaches for Communicating Environmental Monitoring Data

Detailed Data Review: The bulletin will necessarily contain only a synopsis of the previous quarter's air monitoring data in order to appeal to a wide audience and fit into a reasonable format. A small segment of the community may want to scrutinize the entire data set. The Environmental Monitoring Working Group recommends current and historical air monitoring information be available to interested persons through the Army's Joint Administrative Record Document Facility (JARDF) either in hard copy or electronically. This information will also be available at the state and EPA offices. Having the full data set available avoids the impression of hiding information.

Internet: The Environmental Monitoring Group recommends the use of the Internet for electronic distribution of the quarterly bulletin. Additionally, the Web Page could be used to transmit more detailed environmental data than can be included in the bulletin. It could also allow readers to e-mail questions or concerns. Many schools now have Internet access and this capability has the potential to complement the environmental education recommendations.

Open House Sessions and Other Community Events: RMA-sponsored events which provide an opportunity for public outreach could be used to highlight the environmental monitoring programs. Since it is not always possible to have the appropriate subject matter expert available at these events, a follow up or feedback process should be devised for questions that cannot be answered on-the-spot (i.e., comments cards or another prescribed method for follow up). Other community events (such as the Commerce City summer series of community barbeques) may provide another venue for "getting the word out". In addition, once the Interactive Comprehensive Air Pathway Analysis (IC-APA) computer tool is fully developed, a computer should be positioned at public events booths to demonstrate how air concentrations are predicted onpost, at the fence line, and in communities. This would provide a highly visible and interactive communication tool and demonstrate the Rocky Mountain Arsenal's proactive approach to controlling air emissions and odors.

Local and high school newspapers: Local community and high school newspapers may provide for inexpensive and effective communication. While this approach probably can't substitute for the bulletin in terms of regular communication, the PIE should investigate whether these approaches can be used to communicate targeted, select information of interest to the communities. If practical, the Environmental Working Group recommends using local newspapers for publishing articles on topics such as: the TCHD odor response unit (to get the word out on who to call if you have a complaint, what the phone number is, how they measure odors, etc.), the Army's use of odor patrols during clean up to avoid offpost complaints, the Army-proposed offpost environmental monitoring station (where it is, what it measures, what it tells us), information on any community involvement in odor reporting (if this is a component of the Environmental Monitoring Subcommittee recommendations).

Attachment 4

Air & Waste Management Association Information

AIR & WASTE MANAGEMENT
ASSOCIATION

SINCE 1907

AIR & WASTE MANAGEMENT ASSOCIATION'S TEACHER-TRAINING PROGRAM

As one of the nation's leading organizations for environmental professionals, the Air & Waste Management Association (A&WMA) is a nonprofit, scientific, technical and educational organization. With 16,000 members in over 65 countries, this worldwide network represents many professions: engineers, educators, scientists, researchers, health professionals, sociologists, economists, policy makers, and environmental managemers. Founded in 1907 as the International Association for Prevention of Smoke, the Association provides a forum for its members to develop programs that are designed to foster the exchange of information, enhance skills and knowledge, and increase the efficiency and effectiveness of environmental management.

The members of A&WMA believe that one of the best ways to achieve their goal of a clean and healthy environment is to improve the environmental literacy of our youth. As future decision makers and voters, children need to learn about the importance of environmental stewardship. Using a scope-and-sequenced, hands-on approach to teach students factual, scientific information about the environment, better prepares students to make responsible, informed environmental decisions. And, since educators are looking for environmental education materials that can be easily integrated into daily lesson plans, A&WMA decided to take an active role by developing a comprehensive Teacher-Training Program, which includes curriculum development and local teacher-training workshops.

Beginning in June 1991, the Air & Waste Management Association (A&WMA) has used a grassroots approach in its award-winning Teacher-Training Program. A&WMA's Environmental Resource Guides (ERGs) constitute the core of this program. The ERG activities were written and field-tested by teachers, and technically reviewed by A&WMA members, environmental educators, and air quality experts.

One Gateway Center
3rd Floor

Within the first five years of the Teacher-Training Program, A&WMA volunteer members have demonstrated their support and commitment to this program by holding over 124 teacher-training workshops. The workshops train K-12 teachers to use A&WMA's hands-on supplementary curricula:*ERG - Air Quality* and *ERG - Nonpoint Source Pollution Prevention.* As of spring 1996, more than 2,600 educators have participated in A&WMA workshops throughout the United States, Mexico and Canada.

The ERG activities provide specific suggestions on how to improve air and water quality. In addition, ERG activities can be easily adapted to regional geographic and environmental concerns by referring to the reference chart found in each ERG unit. These list and cross-reference the air and water quality topics, ERG activities, and related fact sheets. This also allows the classroom teacher to develop instructional units that supplement his/her current curriculum.

A&WMA's *Environmental Resource Guides* provide a series of exercises that demonstrate sources of air and water pollution, the possible effects of this pollution on the environment and what can be done to reduce it. By participating in the activities found in *A&WMA's Environmental Resource Guides,* students will better understand the inter-relationships between land, water and air and how they may have a positive impact if they adjust some of their daily habits. Because several activities include home surveys, students also raise their families' awareness about air pollution.

Although many educators are interested in teaching their students about the environment, some may be reluctant because they have not received training in this area. Depending upon their college backgrounds and post-graduate experience, many teachers have received only minimal education in the basic sciences. The key to overcoming this obstacle is to provide K-12 educators with opportunities to receive hands-on training in the use of scientifically accurate environmental education materials.

A&WMA's Teacher-Training Program has been honored with four national awards from the National Environmental Development Association, the American Society of Association Executives, Keep America Beautiful and Renew America.