Binder 6

NEW MEXICO ENVIRONMENT DEPARTMENT
FIELD SERVICES DIVISION KEYNOTE PRESENTATION

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by

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Definitions

I am starting with a two basic definitions. These may appear inconsequential, but they are essential to the remainder of my presentation.

I will define public health first because it is necessary to understand that, regardless of the title, your department **is** a **public health** agency. Every program in your department is based on public health standards, and each includes a goal of public health protection.

***Public health** is the art and science of **preventing** disease and disability, **prolonging** life, **promoting** health and efficiency of populations, and **insuring a healthful environment** through organized community effort.*

It is useful to discuss environmental health by utilizing the terminology "environmental health and protection," rather than environmental health or environmental protection. To an undesirable extent, the two separate terms have been utilized to denote programs based on organizational settings rather than logical or definable differences in programs, missions or goals.

Environmental health and protection is the art and science of protecting against environmental factors that may adversely impact human health or the ecological balances essential to long term human health and environmental quality. Such factors include, but are not limited to, air, food and water contaminants; radiation; toxic chemicals; wastes; disease vectors; safety hazards; and habitat alterations.

Brief Historical Overview of Activities in New Mexico

I am frequently reminded that there is little institutional memory among personnel in what is now termed the Environment Department. Therefore, I will spend a few minutes providing an overview of some of the earlier history of environmental health and protection activities and agencies in New Mexico.

In 1916, Dr. Charles Chapin wrote that, "It is unfortunate that a state with a population which now numbers nearly half a million should do nothing for public health. It is the only state of which this can be said."

The establishment of the New Mexico State Health Department in 1919 was truly the result of the efforts of the people of New Mexico. Clinton P. Anderson (later to become U.S Representative, U.S. Secretary of Agriculture, and U.S. Senator) was one of the leaders of the New Mexico Public Health Association and became its first director in 1919. Anderson had come to work for the old Albuquerque Herald (since merged into the Albuquerque Journal) in 1918 after having come to New Mexico to recover from tuberculosis. Among many other remembrances, Anderson described powerful Senator George Kaseman as a "stumbling block." Kaseman criticized the health department's "lavish spending" and the

purchase of a portable chlorination plant. Kaseman took particular exception to the portable chlorination plant, having indicated that things of that nature should not be purchased until needed. By one of the strange workings of fate, the next outbreak of typhoid fever was in Madrid in the mining camp of Senator Kaseman. After the chlorination had accomplished it's good things, Senator Kaseman was most penitent, never wanted the chlorination plant to leave Madrid, purchased the plant, and became a powerful friend of public health.

Newspapers were not particularly supportive of early efforts to develop a state health department. One editor suggested that a state health commissioner would be enough, another suggested that since a public health nurse would be essential, only a nurse would be needed. And another believed that since the commissioner of health would have knowledge of sanitation, there would be no need for a sanitary engineer. Others believed that the $2,000 salary for a bacteriologist and the cost of a laboratory could be saved as there was a bacteriologist in Albuquerque who could provide all the bacteriological examinations necessary for no more than $250 per year.

The second meeting of the Board of Health in August, 1919 saw the authorization of the Division of Sanitary Engineering, **which was the direct line predecessor to the New Mexico Environment Department.** At the fourth meeting of the New Mexico Board of Health in January, 1920, the Public Health Laboratory was authorized, Myrtle Greenfield was appointed director, and a small laboratory established on the University of New Mexico campus. At this 1920 meeting, regulations were adopted governing water supply, sewage disposal, sanitation of foods, and the prohibition of common drinking cups and towels in public places.

During those days milk supplies were abominable, filthy and infected with tuberculosis, brucellosis, and mastitis. Milk was not pasteurized. Water supplies were dangerous and were the cause of typhoid and dysentery. There was no chlorination or filtration of water supplies. Sewage disposal was a tremendous problem as sewage was untreated, discharged into streams or arroyos, and used for irrigating vegetables. Three-fourths of the population used outdoor privies, of which 10% were fly proof. Malaria was common in many areas of New Mexico. Garbage was strewn around homes, alleys, and in open spaces as there was no organized collection. House flies were everywhere, breeding in garbage, sewage, and horse manure. Food sanitation was non-existent, and there was no organized program. As late as 1940, there were 125 cases of rabies among dogs.

In 1949, the regional office of the U.S. Public Health Service issued a report stating that the death rate for diarrhea and enteritis was nearly seven times as high in New Mexico as in the United States as a whole, and that death rates from typhoid and paratyphoid fever were twice the national average. The state health director said it demonstrated "that much basic sanitation work is still needed in New Mexico because typhoid fever, diarrhea and enteritis are known among public health workers as the filth diseases. They are spread through the improper disposal of the intestinal discharges, which indicates that one of the pressing problems before New Mexico is better sewage disposal, better and safer water supplies, more

protection of food supplies, and an unrelenting fight against flies and other insects which play a role in the spread of filth. If these death rates are to be reduced, not only must the number of sanitarians be increased, but the municipalities must develop more comprehensive systems of water supplies and sewage disposal plants."

But the early day public health personnel quickly made giant strides in making inroads on all such problems. The New Mexico District Health Act of 1935 created ten health districts. Every district had at least one health officer, one public health nurse, and one sanitarian. The state did have full time, albeit sparse, coverage. An eminent public health authority, Dr. Wilson Smillie, wrote that, "The last state to form a Board of Health was New Mexico. It began late, but within a short time it had one of the best state health departments in the nation."

I joined the New Mexico Department of Public Health in 1950 as Grant County Sanitarian at $225 per month, subsequently became District Sanitarian, and was promoted and transferred to Santa Fe as State Sanitarian in 1951. My duties included state-wide program quality control, and training field personnel.

Albuquerque Mayor Clyde Tingley had appointed one city milk inspector in the early 1940's, to inspect the dairy farms and milk plants in the Albuquerque area. Other functions such as food sanitation and meat inspection were added later. By 1955, the title of the department had evolved from city milk inspector, through city sanitary inspector, and city sanitation department to the Albuquerque Health Department.

In 1955, I was appointed Chief Sanitarian for the Albuquerque Health Department. I was the only person in the department who had a degree of any type. Most were political appointees whose duties largely included getting out the vote for the party in power. Inspection fees were collected in the field, and never got to the City Treasurer's office. So-called "sanitarians" would recommend lindane vaporizers (later outlawed) during the day, only to return after business hours and sell such vaporizers to the proprietors. Bribes were commonplace. The director spent most of the day operating his laundry business and collecting money from his string of mechanical toy horses located in front of businesses which the department regulated. Paradoxically, he also spent considerable time on his church activities. Following their morning coffee "conferences" at the old Hilton Hotel Coffee Shop, most department personnel would return to their own business interests unless it was time to collect some more inspections fees or recommend some more vaporizers. All personnel drove their private vehicles on a mileage reimbursement basis, plus gasoline from the city pumps. Mileage checks received usually approximated their monthly car payments, and gasoline was frequently drained from their tanks out on the mesa to make it appear that they were using more gasoline so they could collect more mileage. Lines at the city gas pumps were long on Friday afternoons as employees had their vehicle tanks filled for week-end recreational trips. I recommended to the director that, as a first step, we at least require all personnel to check in at the end of the day. But he indicated that he didn't want them to have to so anything he didn't want to do. It was professionally and ethically lonely!

While I found it distasteful and career threatening, I took steps to get the incompetent director removed. I was then appointed Director of the Albuquerque Health Department. As rapidly as possible, I dismissed the remaining incompetents and commenced appointing qualified personnel. We developed programs such as basic programs as food sanitation, pure food control, milk sanitation, meat inspection, industrial hygiene, swimming pool safety and sanitation, housing conservation and rehabilitation, environmental health planning, sewage disposal, water supply protection, subdivision control, air pollution control, radiation protection, and low-rent leased housing. We designed and spawned the city urban renewal program. The animal control division was transferred to the health department, as was the entire solid waste management department. We improved training, accountability, and quality. We gained enactment of the New Mexico Municipal Health Act which specified the powers and duties of a municipal health department. We earned the strong support of the media, the public, and elected officials. We gained approval to change the name of the department to the Albuquerque-Bernalillo County Environmental Health Department (the first local environmental health department in the nation) concurrent with passage of a county environmental health code which we developed. We regulated all dairies, milk plants and food processing plants within New Mexico which shipped their products into Albuquerque. We were primarily responsible for passage of the New Mexico Air Pollution Control Act and the New Mexico Water Pollution Control Act.

In 1967 I returned to Santa Fe as Director of the newly titled Environmental Services Division. We quickly developed the state's first air and water standards as provided in the recently enacted state air and water acts. We improved salaries, staffing, procedures, quality control and training in the state organization. We developed the state occupational health and safety program and gained passage of the OSHA bill. We gained enactment of our bill to create the New Mexico Environmental Improvement Agency in 1971. The EIA was retitled in 1976 as the Environmental Improvement Division. It is now the Environment Department, the direct line successor of the 1919 State Sanitary Engineer.

In 1973, I gained legislative authorization for the agency and building that I termed as the New Mexico Scientific Laboratory System ---- which is still a first, and is a unique organization in the nation. I was appointed SLS Director to get the SLS organized, constructed and adequately funded, and staffed. In 1975, I returned to the Santa Fe office as state health officer, again having supervision over the Environmental Improvement Division. We developed a number of new and progressive environmental initiatives including ground water protection regulations. During this time, I worked with the Governor's office and legislature to create the Health and Environment Department in 1976. I was appointed deputy secretary, and later Cabinet Secretary prior to retiring from state government in 1988.

Brief Historical Overview of Federal Activities

Until the late 1960's and early 1970's, organizational models for the delivery of environmental health services at the federal, state, and local levels were reasonably standard.

At the federal level, most environmental health responsibilities, as they then existed, were lodged within the Consumer Protection and Environmental Health Service of the U.S. Public Health Service.

During the late 1960's and early 1970's, the public became concerned and aroused over the deteriorating state of the environment. President Richard Nixon's Council on Executive Reorganization (known as the Ash Council), appointed in 1969, conducted extensive hearings and studies regarding a federal environmental organization and made recommendations to President Nixon. Representing the American Public Health Association, I presented testimony to the Ash Council recommending that the scope of programs included in a new environmental agency should be broader than that which was ultimately developed. I also recommended that the proposed Environmental Protection Agency (EPA) not be a component of the Department of Interior due the obvious conflict of interest with the resource development responsibilities of the Department of Interior. The Senate Committee on Public Work's Environment Subcommittee, chaired by Senator Edmund Muskie, also conducted lengthy hearings. The Congress was convinced that a new agency should be developed to be the lead environmental agency and aggressively administer a wide range of environmental programs. President Nixon created the U.S. E.P.A by Executive Order on September 9, 1970.

Risk Assessment

We do not live in a risk-free society or environment. Therefore, the goal for environmental health and protection programs should not be "zero-risk." The pursuit of zero-risk as a standard or goal is frequently unnecessary, economically impractical, unattainable, and usually creates unfounded public concern when zero-risk is not attained. Additionally, the pursuit of zero-risk as a goal for one issue may preclude resource availability to deal with other priorities. **Nothing is risk free, but many things are safe enough.**

Considering the serious differences in recommended priorities between scientists and those of the public and political leaders, risk assessment is a high priority issue to be understood and practiced by all interests involved in protecting the health of the public and the quality of the environment.

Utilizing sound scientific principles to assess risk is vital to recommending priorities, designing environmental health and protection programs, requesting funds, and evaluating control efforts.

Models utilized to determine risk commonly consider hazard identification, exposure assessment, amount or dose-response, and risk characterization.

The U.S. Environmental Protection Agency's efforts to base funding on relative risk have not been successful. Reasons include the political impact of public sentiment, the efforts of various environmental activist groups, and the nature of the congressional committee system

where committees jealously protect their own environmental turf.

Like other statistical processes, the findings of risk assessment models may vary depending on the assumptions, data and models utilized. Risk assessment components include hazard identification, exposure assessment, dose-response assessment, and risk characterization. Serious debate continues over the validity of risk assessment models and methods. Understandably, such differences are confusing to public policy makers, and sometimes create a credibility gap concerning risk assessment as a useful process.

Risk assessment has always been utilized informally and even intuitively by public policy makers and environmental health and protection personnel. Utilizing risk assessment mathematical models has been a comparatively recent development. Whenever you make a decision, or develop a policy, or manage an environmental problem, you have performed a risk assessment based on available information. At times, environmental personnel must make major emergency decisions based on incomplete but **compelling** information without having the luxury of waiting until **incontrovertible** evidence is available.

Interestingly, it has been shown that by taking nearly all relevant information into consideration, a group of scientists correctly predicted the outcome at a higher success rate than computer-assisted models.

Risk assessment remains as much an art as a science, and risk assessment models need significant improvement. Human health and the environment would be better served by having risk assessment recommendations developed by institutions separate from those having risk management responsibilities so as not to unduly skew or politicize the process.

Every environmental health and protection practitioner need not be a technical expert in risk assessment modeling procedures, but should understand their usefulness and limitations.

As practitioners:

- We must better understand the role of science in determining public policy, place a high value on scientific excellence when developing public policy, and recognize the misuse or absence of science in an effort to justify a position or alarm the public.

- We must recognize that if all the alleged environmental catastrophes were scientifically factual, we would have many times our actual morbidity and mortality rates.

- We must refute stories which are not based on sound epidemiology, toxicology and risk assessment.

- We must question reports which base a problem on one anecdotal example, e.g., one cancer patient near a hazardous waste site, that capitalizes on appeal to the

emotions.

• We must beware of individuals and organizations **purporting** to use science to front and further their organizational and political objectives.

• We must be scientifically critical. Too many practitioners are actually only regulators and functionaries, ever ready to accept, promote and enforce the current party line or misinformation.

• We must recognize the difference between science based facts and public perception.

• We must always question, challenge, investigate alternative solutions, and analyze existing and proposed regulations and standards to determine the validity of their scientific base. Existing programs, standards and regulations tend to be magical and take on lives of their own. They are seldom challenged. A standard in motion tends to remain in motion in a straight line unless impeded by an equal and opposite force. Environmental health and protection professionals should provide the scientific equal and opposite force to challenge any prevailing misunderstanding of risk.

• We must remember that people tend to over-estimate risk from rare but dramatic events, and tend to under-estimate common events such as unintentional injuries and deaths, and the slow homicide and slow suicide caused by tobacco. People disdain changing preconceived notions about risks and priorities, and people are quick to dismiss evidence as erroneous or biased if the information contradicts their preconceived opinions.

• We must understand that many Americans, and even some public health practitioners, seem to exhibit a love of calamity. Some extremists are applauded and profit from false predictions of environmental calamity, some of which becomes translated into public hysteria and public perception, thence into political action, and finally into expensive and unnecessary programs and public policy. Those promoting such hysteria accept no responsibility for their false statements and predictions.

• We must define problems and their attendant risk before proposing solutions, and fit the solutions to the problems rather than the problems to the solutions. Some groups seem to consistently have canned solutions waiting for problems.

• We must understand that a low risk program becomes difficult to stop or alter once a bureaucracy or an industry is developed to promote the program.

And finally:

• We must be wary of accepting problems based only on extrapolations and

correlations rather than on good epidemiological and toxicological cause-and-effect studies.

If we consider correlations only, we would conclude that:

CARROTS WILL KILL YOU! After all,

- Nearly all sick people have eaten carrots. Obviously the effects are cumulative.

- An estimated 99.9% of all people who die from cancer have eaten carrots.

- 99.9% of people involved in auto accidents ate carrots within 30 days prior to the accident.

- Some 93.1% of juvenile delinquents come from homes where carrots are served frequently.

- Among people born in 1879 who later ingested carrots, there has been a 100% mortality.

- All carrot eaters born between 1900 and 1910 have wrinkled skin, have lost most of their teeth, and have brittle bones and failing eyesight, if the ills of eating carrots have not already caused their deaths.

Additionally, keep in mind that **STORKS BRING BABIES!** The number of storks in Europe has been decreasing for decades. Concurrently, the European birth rate has also been declining.

We all know we would be foolish to accept these correlations as evidence that storks bring babies or carrots cause illness and death. The science of epidemiology attempts to sort out from myriad chance correlations those meaningful ones which might involve cause and effect. However, we all know that epidemiological methods are inherently difficult, that it is not easy to obtain convincing evidence, and that there are many sources of bias.

Risk Communication, Public Support, and Building Bridges

Experience indicates that many environmental health and protection practitioners have not demonstrated adequate knowledge and skills as risk communicators. This is one of the reasons environmental health and protection priorities and policies frequently differ from those recommended by scientists. In the absence of continuing effective risk **communication,** sound risk **assessment** is merely an academic exercise. Many practitioners continue to confuse public information and the distribution of public information materials with the art of risk communication.

Risk communication is an art requiring complete openness throughout any planning and decision process, as well as embracing, including and involving appropriate interest groups. Failures to communicate risk and develop scientifically valid priorities and policies are frequently linked to the failure to involve and educate the public and appropriate interest groups throughout the process and openly discuss the needs, assumptions, and alternatives, as well as the data on which risk has been assessed.

Environmental health and protection is the public's business, and will not be properly understood, supported or attained in the absence of continuing public information and educational activities. While all environmental health and protection personnel should be involved in these activities, it is appropriate that the agency utilize staff specifically trained and experienced in assuring a free flow of information and the attainment of new skills by the public, including the news media, target groups, citizen groups, professional groups, elected officials, and other agencies involved in the field of environmental health and protection.

Effective environmental health and protection programs depend on developing and utilizing constantly travelled communication bridges and network processes connecting a wide variety of groups and agencies involved in the struggle for a quality environment and enhanced public health. A few such agencies and interests include land use, energy production, transportation, resource development, the medical community, public works officials, agriculture, conservation, engineering, architecture, colleges and universities, product design and development, economic development, chambers of commerce, environmental groups, trade and industry groups, and elected officials. These relationships should be a matter of organizational policy, and should be institutionalized rather than being left to chance or constantly changing personalities.

Priorities

Priorities for environmental health and protection programs vary nationally, regionally, and locally. Public and political perception of risk and priorities frequently differs from that of environmental health and protection scientists.

A December 1991 survey (conducted by the Institute for Regulatory Policy of nearly 1,300 health professionals in the fields of epidemiology, toxicology, medicine and other health sciences) entitled *The Health Scientist Survey: Identifying Consensus on Assessing Human Health Risk,* indicated that:

> *Over eighty-one percent (81%) of the professionals surveyed believe that public health dollars for reduction of environmental health risks in the United States are improperly targeted.*

A Roper poll determined that, in terms of public perception, at least 20 percent of the U.S. public considered hazardous waste sites to be the most significant environmental issue. But contrary to public perception, the report of EPA's Science Advisory Board, *Reducing Risk:*

Setting Priorities and Strategies for Environmental Protection, lists ambient air pollution, worker exposure to chemicals, indoor pollution and drinking water pollutants as the major risks to human health. While not EPA programs, food protection, vector control and unintentional injuries should be added to this list by any reasonable public health priority. Legitimate scientific debate continues over the proper standard and appropriate measures for the issue of childhood lead poisoning, but many researchers believe that childhood lead poisoning should also be a high priority issue in spedific areas.

Mission

Environmental health and protection agencies should have missions of delivering services in such a manner as to protect the health of the public and the quality of the environment.

Other agencies, such as agriculture departments, have an obvious and appropriate mission of promoting and protecting a given industry or segment of public interest. Conflicts of interest occur when missions are mixed, thereby resulting in the familiar "fox in the henhouse" syndrome. Such conflicts of interest result in the public being defrauded rather than receiving the protection they deserve. If environmental health and protection agencies do not fully develop and understand the necessity of a mission of protecting the health of the public and the quality of the environment, they may end up actually protecting or promoting the interests of those they are charged with regulating.

Essential Program Support Activities

Epidemiology

Environmental epidemiology is a specialized epidemiological function which deals with extrapolations and correlations as well as direct cause-and-effect investigations. Early day environmental health practice was geared primarily to communicable disease problems. Now, it also embraces the impacts of increasing amounts, types, and combinations of non-living contaminants and other stresses. Such impacts are more subtle and long range in their effects. There is greater difficulty in measuring the effects as well as in precisely isolating and understanding the cause.

Now that the former Health and Environment Department has been split, a **Governor's Executive Order should be developed** to mandate the essential relationships and procedures between the Office of Epidemiology and the Environment Department, as well as the milk sanitation and meat inspection programs of the New Mexico Agriculture Department. Such essential relationships cannot be left to chance or constantly changing personalities.

Continuing Education

Formal education in environmental health and protection was once considered to be a vaccine that would prevent ignorance and ineffectiveness later in one's career. However, such

formal education is inadequate by itself, and does not provide personnel all the knowledge and skills for leadership and effective careers. Continuing education is an essential component of your careers. We all learn more readily as we encounter specific needs. Such continuing environmental health and protection education should be budgeted, timely, relevant, economical and convenient, as well as strongly supported by your management.

Laboratory services are also essential to your efforts. Here again, a **Governor's Executive Order should specify the relationships** between the Scientific Laboratory and the Environment Department, as well as the milk sanitation and meat inspection programs of the New Mexico Department of Agriculture.

Current Backlash, and Some Examples

Environmental health and protection is not the sole proprietary interest of either the Democrats or Republicans. Most of you were not involved when many of our Nation's basic environmental laws and agencies were developed during a Republican administration. In general, many of the more recent federal environmental regulatory efforts have been of significantly decreasing cost/benefit to the public. Some of the standards would require that billions be spent to prevent one premature death. The environmental activist lobby has had the ears of key congressional leaders for many years, with inadequate participation by environmental scientists and those public and private interests which are affected. The Washington based environmental activists purport to represent the public, but are frequently more interested in fomenting environmental hysteria to insure successful fund raising efforts. There is always a pendulum effect to regulatory efforts which are too extreme in either direction. Now, the pendulum may swing too far toward inaction as representatives of the private sector now have the influence rather than the environmental activists. Most of us would probably agree that the backlash should result in a middle-of-the-road status, but this may not be the case.

I will discuss a few of the scores of issues which have resulted in the backlash:

Radon Surveillance

A great deal more data should be evaluated before further effort is expended except in limited areas of the nation where there are unusually high levels of radon in the underlying geological formations.

Radon risk was extrapolated from studies of 375 uranium miners who died of lung cancer --- exposures that were as high as 12,000 times the level found in average U.S. homes, and 600 times the level found even in the nation's "hottest" 0.2% of homes. Studies in Florida, Iowa, and Washington State have indicated that statistically adjusted lung cancer death rates in high radon areas are below the national rate. Another study which included 415 U.S. counties as well as areas in Finland, Sweden, and China indicated the same conclusion. More recently, a Missouri study published in the Journal of the National Cancer Institute

reported that "an association between lung cancer and the exposure to domestic levels of radon was was not convincingly demonstrated."

At worst, studies suggest that **without smoking** radon is an unimaginably small public health risk. Virtually all the rise in lung cancer death rates occurred after **cigarette smoking** took hold. Before 1920, when radon was equally prevalent, lung cancers were so rare that a finding was a major event for medical researchers. Even EPA research, as well as other research, notes that the risk from radon exposure is closely interdigitated with smoking. Smoking cessation is far more desirable, economical and effective than continuing efforts as currently designed.

While there is no question that radon is a carcinogen, many basic questions remain as to the time and level of exposure, as well as the connection to both smoking and second hand smoke.

The nation's $16 B-per-year radon abatement effort is based on inadequate science. But a program in motion tends to remain in motion in a straight line unless impede by an equal and opposite force. This is particularly true when bureaucracies, as well as an industry, have developed to promote the program.

A flyer which I received yesterday, describes a new book, Element of Risk: The Politics of Radon, published by Oxford University Press, and states that ---*"no epidemiological study has confirmed that home-owners are at great risk, and exposes those who stand to gain from the policy decisions made in Washington. Since it is not caused by any industry, radon has been a convenient issue. Under the Reagan administration, for example, an aggressive radon policy proved to be an easy way to challenge the popular perception of an anti-environmental president."*

Fiber Phobia

The public's "fiber phobia" about asbestos in buildings is out of proportion to the risk, yet EPA continues an improperly designed program. Of the two types of asbestos fibers, the major potential health risk is associated with amphibole asbestos rather than chrysotile asbestos which comprises more than 95% of asbestos in buildings. Asbestos removal probably poses more of a risk than leaving the material in place. Research has indicated that asbestos exposure is higher at major traffic intersections than within buildings where asbestos is still in place and in good condition. EPA policy makes no distinction between fiber size and types. The asbestos risk predictions were based on mathematical models, not on human experience or epidemiology. A large number of mesothelioma cancer has been among men who were asbestos workers, of whom a large percentage were also heavy smokers. With the usual caveats about the uncertainties inherent in risk assessment analyses, the **lifetime** risks of excess lung cancer or mesothelioma are on the order of 10 per million for nonsmokers. Interpreting the significance of such small risk seems more a matter of individual and social values than a problem amenable to scientific solution. A threshold for an inhaled dose of

asbestos causing mesothelioma has not been identified, and it may be impossible to do so given the complexities of asbestos exposure.

Safe Drinking Water Act

I am just flagging this issue in passing, as I know you already have detailed knowledge of the ridiculous over-kill requirements of the federal Safe Drinking Water Act. It was obviously designed by extremists sitting in cubicles on the banks of the Potomac, and much of it is not relevant to problems in most New Mexico water supplies.

Community Carbon Monoxide Standards

Much of the data used to develop community carbon monoxide standards were based on studies by Aranow, and his studies were later discredited. Some years ago, EPA's Clean Air Advisory Committee indicated that the 9 ppm standard could be raised to 12 ppm, but the EPA Administrator indicated such a change would "be disruptive to ongoing programs." The American Thoracic Society noted that the first effects of decreased capacity in patients with angina pectoris do not occur until the sliding 8-hour CO **average** reached a level somewhere between 15 and 18 ppm. Further, based on the discredited Aranow studies, there was earlier onset of leg pain in exercising subjects with peripheral arteriosclerosis at levels beyond an 8-hour average of 18 pp. Other studies noted impairment of vigilance in tasks among experimental subjects commencing at 8-hour levels somewhere between 18 and 45 ppm.

Further EPA studies did not replicate or confirm the discredited Aranow studies. But the standard remained the same. **A standard in motion tends to remain in motion in a straight line unless impeded by an equal and opposite force!**

Albuquerque and Bernalillo County would have been in compliance with EPA CO standards several years ago had the standard been raised to 12 ppm in accordance with recommendations of EPA's own Clean Air Advisory Board. Seeking compliance through the inspection and maintenance program has been a major expense to the local economy, and the money could have been better used in many other ways -- if it had to be used at all.

The major reductions in CO in Albuquerque have been due new vehicle technology, oxygenated fuels, and "no-burn" nights.

Sidewalk Rest Rooms

The City of New York had sidewalk rest rooms designed to satisfy the needs of the public. However the designs did not satisfy the requirements of the Americans with Disabilities Act. Therefore, installations which would have served 99.6% of the public in downtown New York were denied the rest rooms due to .4% that could not get a wheel chair into the facilities.

Environmental Justice

It is clear that there is a correlation between the location of hazardous wate facilities and ethnic minorities. However, this fact does not indicate a cause and effect relationship. So-called "environmental justice" to remedy this situation and now become another misguided and detrimental program in motion. The program is based on the "victim complex" rather than good data. EPA seems to want environmental scientists at the federal, state, and local levels, as well as in industry, to become social workers. State and local governments are forced to spend time and effort dealing with the hysteria and "victim complexes" induced by EPA efforts. Industry and business are also big losers.

But in the long run, the very people yelling "victimization and discrimination" may be the biggest losers. This is because the best thing that can be done for the public health is to provide jobs and a healthy economy. Forcing industry out of an area, may be denying jobs for the self proclaimed "victims."

As we all know, industry locates in accordance with a number of factors including cost, land and facilities availability, land use restrictions, financial incentives, labor availability, training possibilities, tax rates, quality of educational and cultural opportunities, resources availability, transportation, and utilities availability. Creating victims and discriminating is not among industry's goals when making location decisions. The facts are that most such facilities existed for years before a neighborhood sprouted around them.

"Environmental justice" is one of the more recent examples of creeping socialism. What a wonderful, effective label! And who could be against environmental justice? Its obviously superior to God and Parenthood (politically correct version of Motherhood). This is the modern version of the Robin Hood Complex.

"Environmental justice" has been on a roll, thereby spending more taxpayer's money and possibly denying employment to those who need it most.

Power Line Fields and Public Health

The Council of the American Physical Society, by a vote of 29 - 1, declared that purported health effects of power line fields have not been scientifically substantiated, and the cost of mitigation and litigation "is incommensurate with the risk, if any." Since EMF was first suggested as a link to cancer in 1979, epidemiological evidence has grown ever fainter and proposed mechanisms more speculative. The Council action, taken at its 22 April meeting, was a result of several years of discussion and monitoring of the issue by the American Physical Society Panel on Public Affairs, and was endorsed by the leaders of the Biophysics Division of the Society. This is the strongest position on the EMF issue taken by a major scientific society.

Hysteria Over Alar

Not many people reacted as hysterically to the baseless Alar scare s the folks who were afraid to pour apple juice down their drains. But in a way, the foolishness of a few symbolizes our nation's love of calamity: an emotional reaction based on misinformation, disinformation, and the faulty use of statistics. Paradoxically, the ban may raise cancer risk, because the action was taken without considering the **net impact** of the action. Alar, a growth hormone, strengthens the bond between the apple and the tree, making the fruit less susceptible to leaf miners. Alar's use obviates the need for much harsher insecticides, whose theoretical cancer risk is much greater. The Alar panic was deliberately set off by a public relations man paid to hype a report on pesticides by the Natural Resources Defense Council which feared its study would be ignored by the media. The flack promised an exclusive to gullible Ed Bradley, who used "60 Minutes" along with a lot of scare talk to tell viewers they were feeding "the most potent cancer-causing agent in our food supply to their young children." To generate follow-up stories, scientist Meryl Streep was sent around with a mothers-against-Alar message. Within days the panic was so widespread that when one mother realized her youngster had taken an apple to school, she was reportedly able to get a state trooper to flag down the school bus to retrieve the poisoned fruit.

But the story was applesauce. The findings in the report had not been checked with scientific rigor The level of chemical residue on the apples calculated in the study were greatly exaggerated. Studies of Alar ingestion in mice were negative until they were given such massive and unrealistic doses they were essentially poisoned.

The moral: Don't rely on press agents or movie stars for sound scientific advice.

Delaney Clause

The Delaney requirement was more appropriate before scientists could measure chemicals in the parts per billion range. It has now outlived its usefulness and should be modified. Given the nature of animal tests, it is not surprising that half of all pesticides tested turn out to be carcinogenic. Noted University of California scientist Bruce Ames has stated that: "99.99% of all pesticide carcinogens now ingested by humans are natural, that is, generated as defense mechanisms within the plants themselves....When I realized that we were already ingesting 10,000 times as many carcinogenic pesticides as synthetic, and human health keeps getting better, I began to put risk into perspective."

It is probable that almost every plant product in the supermarket contains natural carcinogens. Among foods which contain natural pesticides that cause cancer in rats or mice and are present at levels ranging from a few parts per billion to 4 parts per billion are anise, apples, bananas, basil, broccoli, Brussels sprouts, cabbage, cantaloupe, carrots, cauliflower, celery, cinnamon, cloves, cocoa, comfrey tea, fennel, grapefruit juice, honeydew melon, horseradish, kale, mushrooms, mustard, nutmeg, orange juice, parsley, parsnips, peaches, black pepper, pineapples, radishes, raspberries, terragon, and turnips.

Other Fiascos

Other fiascos include the billions spent on Superfund with little useful results, and the impossible search for "zero risk" at the Waste Isolation Pilot Project. The bottom line is to remember that you are environmental scientists instead of mere regulators. You should study the science behind every new "catastrophe-of-the-week" before believing the party line or the popular news media.

We have strong public support for safe food, clean air and water, solid and hazardous waste management, vector control, control of toxic chemicals, and ionizing radiation. The debates deal with some of the ridiculous requirements for achieving and retaining a quality environment. The inappropriate fanatical pursuit of "zero-risk" for every mythical catastrophe-of-the-week has resulted in an understandable backlash.

The Future

You have chosen careers in a field which has a proud and enviable history, as well as a record of achievement in New Mexico. Environmental health and protection will continue to be basic to the public health and environmental quality. You must be continue to be periodically retreaded through targeted continuing education to the end that you may anticipate and keep pace with future challenges. Practitioners must exhibit knowledge and skills in epidemiology, risk assessment, risk communication, risk management, public policy development and implementation, and prioritization of problems based on good science.

The future in your field is bright for those possessing and practicing the necessary competencies, and exhibiting the leadership skills. Anticipating and meeting the challenges of the future will insure a bright future for environmental health and protection practitioners.

> Since I was introduced an hour ago, **some 50 Americans have died in the past hour from slow suicide or slow homicide as a result of the slow, insidious, debilitating, irreversible toxic effects of a legal drug called tobacco.**