ASSEMBLY ENVIRONMENT & PUBLIC RESOURCES COMMITTEE

MINUTES

DATE: Wednesday, April 30, 1975

MEMBERS PRESENT: Chairman Bremner, Messrs Coulter, Jacobsen, Price, Heaney, Jeffrey, Chaney and Weise;

MEMBERS ABSENT: Mr. Banner

GUESTS: Glen Griffith, Fish and Game;
Damon Pohl, Capitol Packaging and Alberto-Culver Hair Spray
Leonard Blaisdell," " " "
Jim Merrill
David Inwood, Wells Cargo - Reno;
Ronald Sherrad, Delta Trucking;
Carl Everett, Du Pont;
Clark Hoffman, " " ;
Bob Guinn, Nevada Motor Transit;
Roland Westergard, State Engineer;
Jack Cardinale, State Engineer's Office;
Brad Stone, Mr. Vergiels intern;
JoBeth Adamson;
Assemblyman Vergiels;
Joe Midmore;
Max Christiansen, Air Conditioning and Sheet Metal Contractors;
Ken O'Connell, Las Vegas Chamber of Commerce

Chairman Bremner announced that the first order of business would be AB 556 which prohibits the use of aerosol containers in Nevada after January 1, 1980. Assemblyman Vergiels, sponsor of the bill, stated that the use of aerosol containers effects and alters the ozone belt and ultra-violet radiation; that as yet it is now known how harmful this is; that aerosol cans cause burns and explosions; that the propellant is 95% of the ingredient in a can; that propellants place an increased load on natural resources.

He also stated that he had received many telegrams from retail merchants and the Chamber of Commerce in Las Vegas relative to his suggested amendment on line 18 of page 1 which would say: to possess for "sale" any aerosol containers. The bill presently reads: "to sell or possess for use any aerosol containers".

Mr. Heaney asked Mr. Vergiels if halomethane is the only gas that can be used in aerosol containers. Mr. Vergiels stated that other gas could be substituted and the cans could be re-packaged. Such changes as these would have no adverse effects on health or the ozone belt. Brad Stone, Mr. Vergiel's intern, stated that halomethane gas is just a part of a family of gases which includes Freon. Mr. Heaney asked Mr. Stone if this gas is necessary in

all containers. Mr. Stone stated that it isn't but that it is used in about 80% of all aerosol containers.

Mr. Heaney stated that if other gases are harmful, they, too, should be banned.

Mr. Vergiels stated that the bill would have to allow for the sale of aerosol containers to other states from supplies which have been warehoused and processed in Nevada. He also stated that the bill could be re-drafted or altered as new developments arise.

Mr. Bob Guinn, Nevada Motor Transit, expressed his concern on the severe effect the bill would have on industry and freight companies which do substantial business in Nevada. He introduced Dr. Clark Coffman from the Freon Division of DuPont.Dr. Coffman offered to submit written testimony since he had not had time to prepare anything in advance of the meeting.

Dr. Coffman explained "ozone" as a belt which screens certain lights at about 25 kilometers (about 19 miles) outside the earth to prevent them from reaching the earth's surface. He felt that the ozone belt could be reduced but this face has not been proven. He feels that two to three years would be needed to further study the issue. Rather than push legislation through, he stated that industry and the Federal government would have a report completed within 2 to 3 years, three years at the outside and suggested that we wait for this expert report.

He stated that in this case, unlike others, industry has responded fairly quickly through world efforts of gas manufacturers who support research programs with a time frame of no more than two to three years. This research will essentially answer questions as to the theory of whether these gases are harmful to the ozone. Nothing has been reported to date. He continued that ozone fluctuates and there is no real evidence that it has been damaged.

He reitterated that it would be much more appropriate to wait for scientific results of these studies for two to three years and not just act on theory; that action by the Legislature now might have to be rescinded at a later time.

He said that as far as the affect of aerosol gases released into the air in Nevada, it would have no effect at all since Nevada, based on world population, releases 1/16 of 1% of the world gases. Action on a Federal level would be more important and legislation is being considered in Congress now and should pass during this session dealing with this issue.

Regarding the health hazard, Dr. Coffman stated that aerosol products presently on the market are safe when used as directed by the manufacturer; that they are closely tested before being placed on the market. He stated that not all products contain this gas

but those that do have it for a specific reasons; they're not flammable and have a very low toxicity; they do not decompose with age. He stated that DuPont will voluntarily withdraw these products from the market if the studies show them to be deleterious to the ozone and this committment has been publicly expressed.

Mr. Heaney asked Dr. Coffman to repeat the proposed deadline for completion of the studies of the effects of these gases on the ozone. He stated that it would be no later than the end of 1977.

Mr. Heaney asked Dr. Coffman if this was an international effort. Dr. Coffman stated that it was from an industry standpoint, not governmental. To Mr. Price's question regarding the percentage of gases dispelled by Nevada, Dr. Coffman stated that this was based on the production of these products and that the United States has 50% of world production.

Mr. Damon Pohl, plant manager of Capitol Packaging in Sparks for six years, stated that his company manufactures hair spray, rug cleaners, etc.; that they employ about 35 people with a payroll of $205,000.00; that they manufacture 14 million units with a weight of about 14 million pounds; that aerosol containers take about 30% of their warehouse space. He stated that his company would be out of business 100% and local suppliers would lose if this bill is passed.

Mr. Leonard Blaisdell, chemist with Capitol Packaging, stated that Nevada has been very active in light industry and distribution; that warehousing is big business now and if we act as vanguards and ban the use or sale of aerosol containers, it defeats efforts which have been made to encourage warehousing and distributing in the West.

Mr. Bremner asked Mr. Blaisdell if the cans were banned, could they be packaged differently and still be sold. Mr. Blaisdell stated that this would take a great deal of research and as yet nothing has been perfected as an alternative.

Mr. Guinn stated that Nevada has been trying to induce warehousing into the State and some is coming to Southern Nevada now. He mentioned several companies in Reno where 15% to 35% of their products are in aerosol containers and that 10% to 15% of the freight from the area involves this type of product. This bill would detract from our ability to advertise warehousing and this aerosol container is a worldwide problem.

Mr. Max Christiansen representing the Air Conditioning and Sheet Metal Contractors stated that this same kind of gas is used in air conditioning in Southern Nevada and that the line must be

drawn somewhere. He stated his complete opposition to the bill.

Mr. Ken O'Connell of the Las Vegas Chamber of Commerce stated that he doesn't know too much about ozone, but that he has received word from many customers who state that they certainly don't want the economy injured and that he supports a study to improve the health hazards. He feels conversion of the containers is a wise approach to the problem.

Dr. Coffman interjected that some companies such as Shaklee have discontinued the use of aerosol containers because of the health hazards.

Mr. David Inwood, speaking as a citizen, stated that he certainly doesn't want to go back to a shaving brush and his wife is not anxious to give up her hairspray. To Mr. Heaney's question, Mr. Guinn stated that the bill would have to state that it is illegal to sell these products inside the State of Nevada; that it would not be much of an inducement to prospective business for Nevada if their product couldn't be used in Nevada.

Mr. Vergiels presented some exhibits to the committee which are attached as Exhibit "A".

Regarding SB 158, making geothermal resource development subject to regulatory control of the state engineer, Mr. Roland Westergard, the state engineer, stated that this bill provides some state regulation to control geothermal development which will become an important resource. Any new regulations would be subject to extensive public review as provided under the State Administrative Procedures Act.

Mr. Leslie Gray, attorney from Reno, introduced Mr. Joseph Aidlin, vice president and counsel for Magna Power Company from Los Angeles. He stated that they have leases on Federal lands in Nevada and that the potential for geothermal development was recognized ten years ago. He felt that the bill was very flexible as to adding regulations from time to time; that Oregon has now adopted a completely revised bill allowing for this exploration.

He stated that a problem exists in Section 5. Since geothermal fluids must be used where they are developed, within a ten to 15 mile radius, because the hot water will cool off if sent any distance, developers must have customers for their product. Geothermal development must compete with readily available commodities. Markets must be found and unless the developer knows that he can get an economical advantage of a field, he is not

going to have an interest in developing it. In Nevada, the temperature of hot water is in the "middle" temperatures, between 170° and 400°. It is primarily used through a re-cycling system where the fuel is heated, converted to gas which turns the turbines. Nothing is vented into the atmosphere. This bill will dampen development on private lands without getting any benefit from it. He offered the committee an amendment to the bill which would exempt heat from the underground waters and water or steam used in drilling and production from the appropriation procedures of Chapter 533 and 534 of NRS. He stated that some steam is used for cooling, condensing and drilling. If this suggestion is added to the bill and if the State Engineer finds there is something to add or correct, he has very broad powers in the conservation of resources.

If this is not added to the bill, it will be left wide open and developers will be discouraged. He continued that he has spent 20 years working on this project and wants to "see it viable before I die".

He stated that his company has drilled several wells in Nevada and that they have opened water sources for secondary purposes and that it is entirely possible that encouraging development would result in water that can be used commercially.

Mr. Jacobsen asked Mr. Aidlin if he felt there was any potential in Nevada for this resource as compared to the geysers. Mr. Adlin stated that he thought Nevada has a tremendous potential at the "medium" water level; that water has been found at the 2,000 foot level as high as 4,000°, but it is very difficult to drill in this area. The amount of heat in water that can be used is related to the cooling water available. If there is a large amount of heat, the heat extractor doesn't have to be aw large. In twenty years, Nevada will be the 3rd greatest potential area for development. In Wabuska geothermal heat is being used in growing foods, fish and algae. (Mr. Aidlin's suggested amendment is attached as Exhibit "B".)

In response to Mr. Aidlin's suggested amendment, Mr. Westergard stated that the waters belong to the public and his suggestion would be a circumvention of the public law, a concept which he opposes. And that when taking water in the form of liquid or steam, the use of that water involved and the resource should then be appropriated under the law. He stated that power companies have never complained about the appropriation procedures. He stated that it would be all right if water isn't withdrawn and used for any purpose. Mr. Aidlin's suggested amendment could affect the resource and other persons with prior rights.

Mr. Aidlin countered Mr. Westergard's statement by saying that he has been up against this everywhere; that there is no other way to do the developing. "In order to get the heat, you have to use the water", he continued. The water must go through a heat exchanger and "Extracting heat is not withdrawing water. Give us the right to extract the heat; we don't need the water which is an expense to return," he concluded.

Mr. Westergard stated that permits have been issued for geothermal exploration but the water cannot be used. He said, "I'm thinking in terms of developing a power source, an industry."

Mr. Weise pointed out that possibly there was a misunderstanding as to appropriation of waters; water you could be appropriating may very well not have any downstream users, but at the same time you could tap into a feeder whereby that water is extracted at one place and affects water rights already given to someone else.

Mr. Aidlin stated that he feels this is a very critical issue in terms of developing the industry in the State of Nevada, but "I can assure you that the extraction of the heat is not an act which should be subjected to the appropriation laws. The State can tell you to reinject the water except for small amounts for drilling or cooling operations. If you really want to protect water, you should include this phrase which says that extraction of heat is not subject to appropriation. No one will spend money on private lands and utilities cannot depend on it for growth".

Chairman Bremner asked Mr. Aidlin to please appear before the committee again on Friday, after hopefully having worked something out with Mr. Westergard.

Mr. Midmore stated that the Railroad Association has no objection to the bill.

To Mr. Heaney's questioning, Mr. Aidlin explained that the problem with complying with the appropriation regulations is that periodic requests must be made with the State Engineer and if a developer wants to change the reasons for appropriation, the State Engineer can refuse permission; that the developer is limited to his original plant. He said that he could understand this application to farming and industry, but "if you're not using the water itself, the appropriation procedure doesn't apply."

Mr. Gray pointed out that he feels Nevada should proceed with the bill with suggested amendments by Mr. Aidlin; that since SCR 28 has been passed which provides for a study into geothermal energy, this bill would go along with that resolution and that we would find out ourselves whether the bill has any bugs in it and in the amendment. He stated that he had provided Senator Wilson with a

copy of the Idaho and Oregon statutes. "There should be no real objection to this amendment with a study to perfect it", he said.

Mr. Aidlin stated that he believes he can satisfy Mr. Westergard's responsibilities to protect the waters; that he supports protecting the water rights and the environment.

Mr. Heaney asked if three states have approved this type of legislation. Mr. Aidlin stated, yes, Oregon, Idaho and California who issue certificates of primary importance and if the water is not used for farming purposes it is excluded from appropriation statutes. "They do this without a fee for the good of the public", he stated.

Mr. Price asked if steam plants do not have to apply periodically for this permit. Mr. Price stated that in Idaho, the water is reinjected, the water coming out is measured and the industry pays for the amount of water that is used in the cooling and evaporation process and compare that with the amount re-injected.

Mr. Aidlin stated that the history is similar to that of natural gas; that royalties are paid to the owner by the amount of power generated and that each areas has its own set-up.

Regarding AB 701, Mr. Glen Griffith of the Department of Fish and Game stated that this bill which provides for special fishing permits for certain institutions for the blind and physically and mentally handicapped would require that one person be responsible for the additional badges issued, from 30 to 50 because they are transferrable and cost the department $1.05 each. He preferred that the number be confined to 30. He submitted a sheet listing the agency and number of special fishing permits issued to each. (Exhibit "C")

To Mr. Heaney's questions, Mr. Griffith stated that special fishing permits are getting into the realm of private centers as compared to State operations and the department wants it restricted only to State agencies. He continued that the department has a big problem with losses of badges and some organizations want the number they have received in the past reduced. Two years ago more institutions were added to this list by the Legislature.

Mr. Bremner asked Mr. Griffith if anyone had ever contacted these organizations to find out just how much fishing is done. Mr. Griffith stated that very little fishing is done. Mr. Jacobsen suggested that the department could be better off if the words "on request" were added and asked if the agencies apply for all 30 now

authorized. Mr. Griffith stated that most agencies do not request the 30 and some have even reduced the number they receive and some don't even request any anymore. One is really not needed for every person who might fish because they are transferrable.

Chairman Bremner stated that this bill would be held by the Committee for testimony from Mrs. Hayes, the sponsor of the bill.

The meeting was adjourned at 5:05 p.m.

Respectfully submitted,

PHYLLIS BERKSON, Secretary

ASSEMBLY AGENDA

~~HEARING~~

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COMMITTEE ON ENVIRONMENT & PUBLIC RESOURCES

Date Wed., Ap 30 Time 3:00 p.m. Room 214

Bill or Resolution to be considered	Subject
SB 158	Makes geothermal resource development subject to regulatory control of state engineer; Spike
AB 701	Provides for special fishing permits for certain institutions for the blind and physically and mentally handicapped; Hayes, Dennen, Barengo
AB 556	Prohibits use of aerosol containers in State of Nevada after certain date. Dreyfus, Ham, Robinson

Aerosols and Climate by P. Chylek and J. A. Coakley, Jr. Science, Vol 183, pgs. 75-77, Jan 11, 74.

"The present aerosol concentration over urban areas in the United States is approximately three times the average concentration over non-urban sites. (1) Electrical conductivity measurements over the oceans (2) imply that the aerosol content of the atmosphere may have doubled over the North Atlantic during the last six decades (but changed little over the South Pacific)..."

"It has been suggested (3) that the observed decrease in the mean temperature over the northern hemisphere (4,5) may be connected with an increase in the amount of aerosol pollutants in the atmosphere. The aerosols attenuate the solar radiation which reaches the earth's surface by backscattering and absorbing fractions of the incident radiation. It has been estimated (6) that a 2 percent decrease in the amount of solar energy reaching the earth might be sufficient to trigger an ice age. Therefore, an understanding of the interaction of solar radiation with aerosols is essential for determining the effects of man's activity on climate."

New Attack on Aerosol Products

NEWS

EX. "A"

2- 399

WASHINGTON (UPI) — People who buy products in aerosol containers are being cheated because they do not realize that up to 95 per cent of the product may be propellant gas, a student-based consumer group said Thursday.

The group said the government should force industry to disclose the amount and percentage of gas on the label of each product and in all related advertising in order to permit rational purchasing decisions and save customers millions of dollars a year.

Doom will a bang, but with a psssst!

By Michael Drosnin

An obscure scientist doing routine research work discovers that a common household product, long thought harmless, has a disastrous delayed effect capable of destroying all life on this planet by the year 2000. The huge amount of product X already manufactured will eventually claim thousands of lives. But an immediate ban will save thousands more—and doomsday can be averted.

The scientist warns the world. A few newspapers pick up the story, but most ignore it. The government takes no action, and industry increases its output of the popular product X. The warning has been all but forgotten when, months later, three major scientific studies all confirm the ominous threat. Television networks broadcast the dire news, newspapers headline it.

We've all seen the movie, and we know what happens next. The entire world swings into action. Cut to Washington, Moscow, Paris, London, Tokyo, the United Nations. Product X factories everywhere are shut down. The scientist is hailed as a hero. Mankind is saved.

Wrong. The world does not swing into action. The factories are not shut down. And one other thing—it's not a movie.

Doomsday by the year 2000. The threat *is* real, but the supposed agent of our destruction is too improbable to be taken seriously. How can a world that has lived three decades with the specter of nuclear annihilation believe it will be done in by a blast of hair spray or underarm deodorant?

Believe it or else: aerosol sprays are the deadly product X. The propellant gases they release may be a time bomb. Harmless in the air we breathe, these gases slowly rise miles above the earth where years later they apparently attack the ozone, the layer of the upper atmosphere that protects us from the sun's most lethal ultraviolet rays. Without that ozone shield, man could not survive.

Aerosols? Ozone? Ultraviolet rays? "It does sound like an elaborate put on, the bad joke of a mad scientist," agrees F. Sherwood Rowland, the University of California chemistry professor who discovered the bizarre menace. "Sometimes I look out the window, everything *seems* pretty much in order, and I have to ask myself, 'Can this really be true?' "

Scientists sounded the doomsday warning on aerosol cans over a year ago. Since then, production has increased 10 percent

The short answer is that we won't know for sure until it's too late. Because the effect is delayed and difficult to measure, it will be impossible to prove that aerosols destroy the ozone until the consequences are horrendous. But three research groups—at Harvard, the University of Michigan and the National Center for Atmospheric Research—have independently confirmed Rowland's calculations. All available evidence shows that he is right, and there is no evidence that he is wrong.

In fact, aerosols have probably already doomed more people than were killed by the atomic bomb dropped on Hiroshima. Even an immediate ban would not save them. The millions of tons of fluorocarbons already sprayed cannot be removed from the atmosphere. Scientists believe the gases have begun to destroy the ozone and will deplete it further over the next decade. That will allow enough ultraviolet radiation to reach the earth's surface to cause 150,000 skin cancers in just one year. The annual death toll will be 6,000. And neither the ozone nor the cancer rate will return to normal for at least a century.

Each year aerosol production continues the consequences become more severe and less predictable. Obviously, the number of cancer victims will increase dramatically. So, too, will the number of men and women having the wrinkled, discolored skin of 70-year-olds when they're only 40 or 50. As the ultraviolet grows even more intense, blinding cataracts will become common.

Up to a point, of course, humans can protect themselves—if the situation gets extreme—by becoming a nocturnal species. However, ultraviolet rays are harmful to all living things, and man cannot outlive his environment. The most dangerous wavelengths break down DNA—the basic building blocks of life—exposing all plants and animals to injury, death and genetic mutation. In fact, it is likely that the first primitive organisms did not emerge from the sea until protected by the development of the ozone shield hundreds of millions of years ago.

"This is not a matter of a few additional random people dying unfortunately by walking across the street at the wrong time," says Harvard professor Michael McElroy, a leading atmospheric physicist. "We are talking about people, animals, plants, the entire system impacted in a way we cannot now predict with certainty."

If the worst fears about aerosals are confirmed, at some point there will be a catastrophic break. When or where is hard to say, but its impact will be global. When

PHOTOGRAPH BY STEVE COOPER

the crunch comes, it may be obvious—the simultaneous destruction of several major food crops, perhaps. Or the telling blow may be more subtle—decimation of the ocean's plankton (and with it, most other marine life), or disruption of bacteria essential to the life cycle. "It seems reasonable that many organisms may be living at the edge of their capability to protect themselves," says Stanford biologist Kendric Smith, who directed a recent National Academy of Sciences study of ultraviolet effects. "There might well be a key link in the plant-animal food chain on the brink right now—we just don't know."

Or the end may be fire *and* ice. A major depletion or redistribution of the ozone could radically alter global climate—even to the extent of bringing on a new ice age. Ultraviolet radiation of such searing intensity that farmers would have to plow what fields survived at night, while glaciers thousands of feet thick leveled cities across Europe and North America. "It's not likely. The chances are about 1 in 10. But I don't think we ought to risk it," says Stephen Schneider, a meteorologist at the National Center for Atmospheric Research.

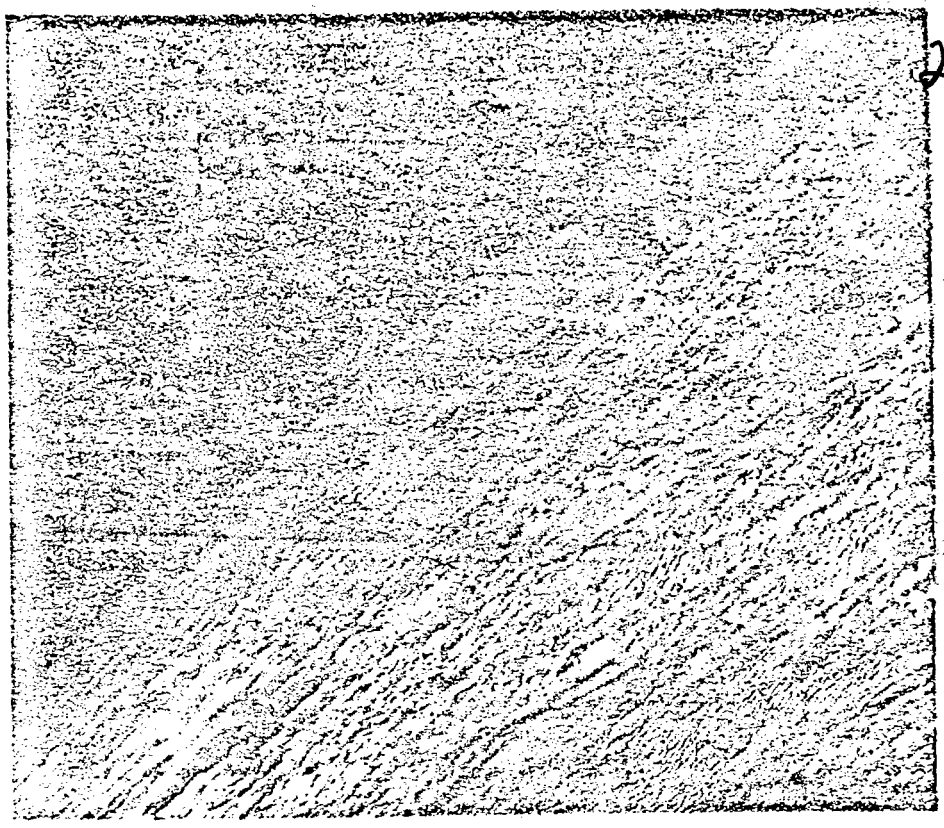
By the year 2000, as much as one-third of the ozone shield may be destroyed by aerosol sprays. The handful of scientists who understand the problem best agree that life on this planet might not be able to sustain the impact.

"We are talking about the end of the world—doomsday in 25 years," says Thomas M. Donahue, a space research pioneer who chairs the atmospheric sciences department at the University of Michigan. "Our system could not adapt to a disruption in a matter of decades of a balance that took several hundred million years to evolve.

"I'm not saying that some forms of life wouldn't survive in unusual protected conditions, but essentially it would be doomsday—certainly the end of mankind," warns Donahue. "The general public and the media may not be taking it seriously, but scientists are."

It was in the fall of 1973 that Sherry Rowland started the research that led to his remarkable finding. "It began as a typical academic study," he recalls. "We were trying to figure out something of no possible interest to anyone but other scientists."

A year earlier, while at a Ft. Lauderdale conference of chemists and meteorologists, Rowland heard that a British scientist, James Lovelock, had found that



COURTESY OF NASA

The ozone blanket: a thin blue line.

nearly all the fluorocarbons ever produced were still in the atmosphere. "The presence of these compounds constitutes no conceivable hazard," Lovelock reported. He suggested that the inert gases—widely known by their DuPont brand name Freon—might be useful as tracers for air movements.

Rowland forgot about fluorocarbons for a year, but then, in need of a subject for an Atomic Energy Commission research grant, decided to find out what eventually happened to the long-lasting gases. He soon realized that nature has no way of destroying freons on the earth or in the lower atmosphere. The propellants, he concluded, therefore must rise into the stratosphere, where they would be broken down by ultraviolet rays, releasing chlorine.

Unknown to Rowland (a chemistry professor with no background in atmospheric sciences), three separate research groups had concluded three months earlier that chlorine injected into the stratosphere would set off a catalytic chain reaction in which a single chlorine atom could destroy 10,000 ozone molecules. But they all decided that their findings were not important because there were no major sources of chlorine in the stratosphere.

Meanwhile, Rowland, who knew there was a major source—Lovelock's harmless fluorocarbons—independently discovered the chlorine-ozone chain reaction. "I kept saying to myself, 'This looks big,' but I hadn't read anything about it, so I figured there must be some flaw."

Just after Christmas 1973 Rowland met with Harold Johnston, the Berkeley professor who two years earlier had first focused attention on the ozone by sounding the alarm on the SST. Johnston told him of the three unpublished experiments confirming chlorine's devastating effects on the ozone shield.

"There was no moment of Eureka! really," says Rowland. "I just came home one night and told my wife, 'The work is going very well, but it looks like the end of the world.' "

For more than a year now we have known that there may be no greater threat to world survival than aerosol sprays. Yet no one seems to care and nothing has been done to avert disaster.

Hearings have been held, studies have been proposed, commissions have been formed—the latest, the Federal Inter-Agency Task Force on the Inadvertent Modification of the Stratosphere, meets in Washington Feb. 27—but no action has been taken and none is likely in the near future.

Two bills have been introduced in Congress, but both call for at least two years of study from the date of enactment before any possible aerosol ban. The actual delay would thus be at least three years—a wait which could doom another 150,000 persons per year to skin cancer, doubling the already inevitable toll. And neither bill is given much chance of pas-

Drosnin's last piece for New Times *was on Guy Goodwin, Nixon's radical chaser.*

sage.

"Frankly, we're trying to sell something based on less than conclusive evidence," says Bob Maher, legislative aide to Florida Rep. Paul Rogers, sponsor of one of the bills. "People will ask why. They'll say this sounds like Buck Rogers. After all there's no *apparent* problem—I mean nobody is falling down dead."

The National Academy of Sciences last September appointed an ad hoc committee to assess "on an urgent basis" the threat posed by aerosols. A month later three of the panel's five members, including its chairman, Donald Hunten of the Kitt Peak National Observatory, urged an immediate freon ban and recommended an immediate full-scale study. "The best opinion," said Hunten at the time, "is that a problem is well on its way." Yet the Academy has still not even chosen members for the proposed study group.

In November the Natural Resources Defense Council petitioned the government to outlaw spray cans. Under law, the Consumer Product Safety Commission must either grant or deny the plea within 120 days. It will not meet the deadline. In three months the CPSC has not even managed to figure out if it has jurisdiction. "This may be something for the Environmental Protection Agency," says CPSC general counsel Michael Brown.

But at EPA, a spokesman calls it "an iffy situation." "We take care of the *lower* atmosphere, and this is an *upper* atmosphere problem," the spokesman explains, suggesting responsibility belongs instead to the National Oceanic and Atmospheric Administration. And Lester Machta, an NOAA director, says, "The freon/ozone predictions are still only a matter of speculation." "Regulatory action will require information, firm information not yet available," echoes Lloyd Tepper of the Food and Drug Administration.

While official Washington assures itself that no one need risk taking action—as if the important question were, What if the scientists are wrong? rather than, What if they're right?—evidence that aerosols threaten us all mounts steadily.

Air samples taken by high-flying planes prove that fluorocarbons have already reached the stratosphere, a 20-mile belt 10 miles above the earth where ozone is concentrated. Laboratory experiments have conclusively demonstrated that the two key chemical reactions do take place. The propellants always break down when exposed to the kind of high energy radiation encountered in the stratosphere. And the chlorine thus released does destroy ozone.

The only remaining question is whether these same reactions actually occur aloft. "There's no reason to doubt it," says Rowland. "If an egg dropped from our lab roof breaks, we can safely assume an egg would also break if dropped from the Empire State Building."

But it seems that the aerosol threat is just too bizarre, too far off and too complex to get political or bureaucratic attention. The danger is neither self-evident nor possible to prove. Besides, fluorocarbon-dependent industries are an $8 billion business employing 200,000 workers. That's something tangible everyone can understand. Especially during a recession with jobless workers marching on Washington. Ecology can wait.

If there were a public outcry, it might make a difference. But everybody's problem is nobody's problem—the entire world population simply does not make an effective pressure group. If just one city were endangered by ozone depletion, there would be a lobby of outraged potential victims. But as things stand, the only well-organized group with interests to protect is the aerosol industry.

Everybody's problem is nobody's problem—the entire world population simply does not make an effective pressure group

Blame for the absence of a public outcry is shared by the media and the scientific community. Nobody is going to believe in doomsday if it isn't in the headlines or on Walter Cronkite. But reporters shy away from complex science stories lacking in human interest. So ozone depletion becomes just another one of those ecology stories that pop up from time to time and then disappear. Few went near the aerosol story until the New York *Times* carried it—nine months after Rowland discovered the threat and three months after his findings appeared in a major scientific journal. On one occasion CBS tried to reach him, but when he called back the next day, "they said it wasn't news anymore."

Scientists themselves have failed to dramatize the full threat implicit in their findings. "We must be careful to cry wolf at the right time," explains Harvard's McElroy. But it might have more to do with the fact that the original discovery that atmospheric sciences have seen lean times since the days of Pentagon and NASA free spending in the early '60s.

If they press now for an immediate aerosol ban, years of funding for studies of the problem may dry up. While Rowland and others have demanded quick action, several key men in the field have given their blessing to a delay. "If the scientific thinking is split on when something must be done, the government will always take the longest time period," says Rowland.

Finally, there's the problem that the issue is too big to fit neatly within any one bureaucracy's jurisdiction. Who's responsible for the ozone? Who's in charge of doomsday? And the problem is also too big for any one government. Fluorocarbons are manufactured by 25 companies around the world and their threat is a global threat. The United Nations doesn't even keep statistics on fluorocarbon production.

Meanwhile more aerosols—almost 6 billion cans—were manufactured last year than ever before. Virtually all the sprays, except shaving cream and food products, use the dangerous propellant gases. Production of fluorocarbons—also used in refrigeration and commercial air conditioning systems—reached record levels last year too, nearly a million tons. And at least 10 percent more will be dumped into the atmosphere this year.

Business is so good that DuPont, the world's largest fluorocarbon producer with half the U.S. market, is building a huge, new $100 million-plus factory in Corpus Christi, Texas, that will double the company's Freon output by 1980. Says Raymond L. McCarthy, DuPont's division manager, "I have faith in the biosphere acting to preserve life."

Even more frightening than the total failure to deal with the aerosol threat now that it's known is the staggering fact that fluorocarbons were being produced on a large scale for 25 years before Rowland's chance discovery. And no one even suspected the danger. How many more years would have passed until someone else recognized the menace? Would it have been too late?

There are 50,000 other common industrial chemicals now in use. The government regulates only the 450 which by chance have been found harmful. Each year 3,000 new chemicals are introduced untested into our environment. If one as seemingly innocuous as freon has proven so grave a risk, is there any question that others are secretly doing us damage?

Just how many other doomsday gases are waiting in the wings?

EX. "A"

2- 402

Aerosols: The Medical Cost of Convenience

You can clean ovens with them, kill bugs with them, coat your pots and pans with them. You can paint with them, spray your hair with them, get rid of rust, dust, and static with them. You can even use one of their 300-odd varieties to perfume the most intimate parts of your body. The convenience of aerosol sprays has won them a place in every room of the home—and a place in many a businessman's heart. Aerosols are a $3-billion industry that puts out nearly three billion cans a year—enough to place 45 aerosol containers in every U.S. household every year.

But with increasing frequency, the possible safety and health hazards of aerosol spray products are being brought to public attention by the media, consumer groups, researchers, physicians, and government agencies. According to a Consumer Product Safety Commission estimate, there are 12,000 injuries associated with aerosol use every year. Even deeper concern centers on potential long-term damage to the heart, lungs, or other organs of those who use aerosol sprays regularly.

What do the safety hazards and the suspicions of toxicity mean to the person who uses those brightly colored cans of propellant-driven products casually, automatically, with the assumption they are safe?

Until the mid-1960's, the safety of aerosol sprays was taken for granted. The industry marveled at the soaring popularity of this clever form of packaging: a three-part dispenser filled with active ingredients, a propellant system, and other compounds such as solvents, perfumes, and emollients. A simple press on a button releases some of the product from the container. Some products, such as shaving cream, are expelled as foam; others, such as snack food, are extruded; and still others, such as deodorants and hair sprays, are released as fine mists.

PROBLEM: SUDDEN DEATHS

All aerosol cans carry with them the possibility of explosion if they are exposed to high temperatures, a danger we'll discuss later. But the spray type of aerosol appears to have a further potential for endangering health. Given off in clouds of millions of tiny droplets, some of them smaller than blood cells, the fine aerosol sprays have the easiest access into the human body.

The first hint that aerosols are not innocuous came in 1967, when reports of deaths among adolescents from sniffing aerosol cocktail-glass chillers appeared in the press. The notoriety apparently led to similar abuses of other aerosol products, including frying pan lubricants, hair sprays, antiseptics. Because of the suddenness of the deaths, ph cians began to suspect a cardiac mechanism. But what its agent? Could it be the aerosol propellant?

The propellants are most commonly fluorocarbons—ch ical compounds of fluorine, carbon, and sometimes chlor or hydrogen. Although fluorocarbons had been consid harmless since introduced as refrigerants 40 years ago, cent findings belie that reputation. When inhaled by labo tory animals, they are rapidly absorbed into the blo stream. In high concentrations they cause abnormal h rhythms, sometimes leading to death of the animals. Th heart disturbances are produced more easily when oxy availability to the heart is reduced—a condition that occur when oxygen in the air is partially replaced with fluo carbons, or when existing heart disease prevents oxy from reaching all portions of the heart.

Equally disturbing, experiments reveal that fluorocarb can act directly on human or animal heart muscle, reduc the force of its contractions, and thus its ability to pu blood through the body. According to cardiologists ac in aerosol research, a combination of these cardiac eff probably contributes to the sudden death of aerosol-sniff youths. Even aerosol proponents now admit that fluoro bon propellants are extremely dangerous when delibera inhaled for their hallucinatory properties. Death can oc after a single whiff, or after the tenth or the hundredth, maybe not at all. It is impossible to know in advance who be fatally affected.

Aerosol propellants have come under suspicion in yet other recent epidemic of mysterious deaths. During 1960's, England and Wales experienced a striking increas mortality among asthmatics. The increase correlated clo with rising sales of aerosol bronchodilators, products t when inhaled, help asthmatics breathe easier. Many of deaths were sudden and unexpected; some of the vict were found clutching empty aerosol inhalers in their ha

Some British investigators concluded that overuse of bronchodilators was probably responsible for the exces mortality. But the responsible ingredient has not been pointed. Was it the anti-asthma agent, isoproterenol (a tent heart stimulant present in high concentrations in aerosol then widely used in the United Kingdom), fluorocarbon propellant, or a combination of the two? W the cardiac effects of those ingredients touched off by decrease in oxygen intake that occurs during an asthm

Consumers Index

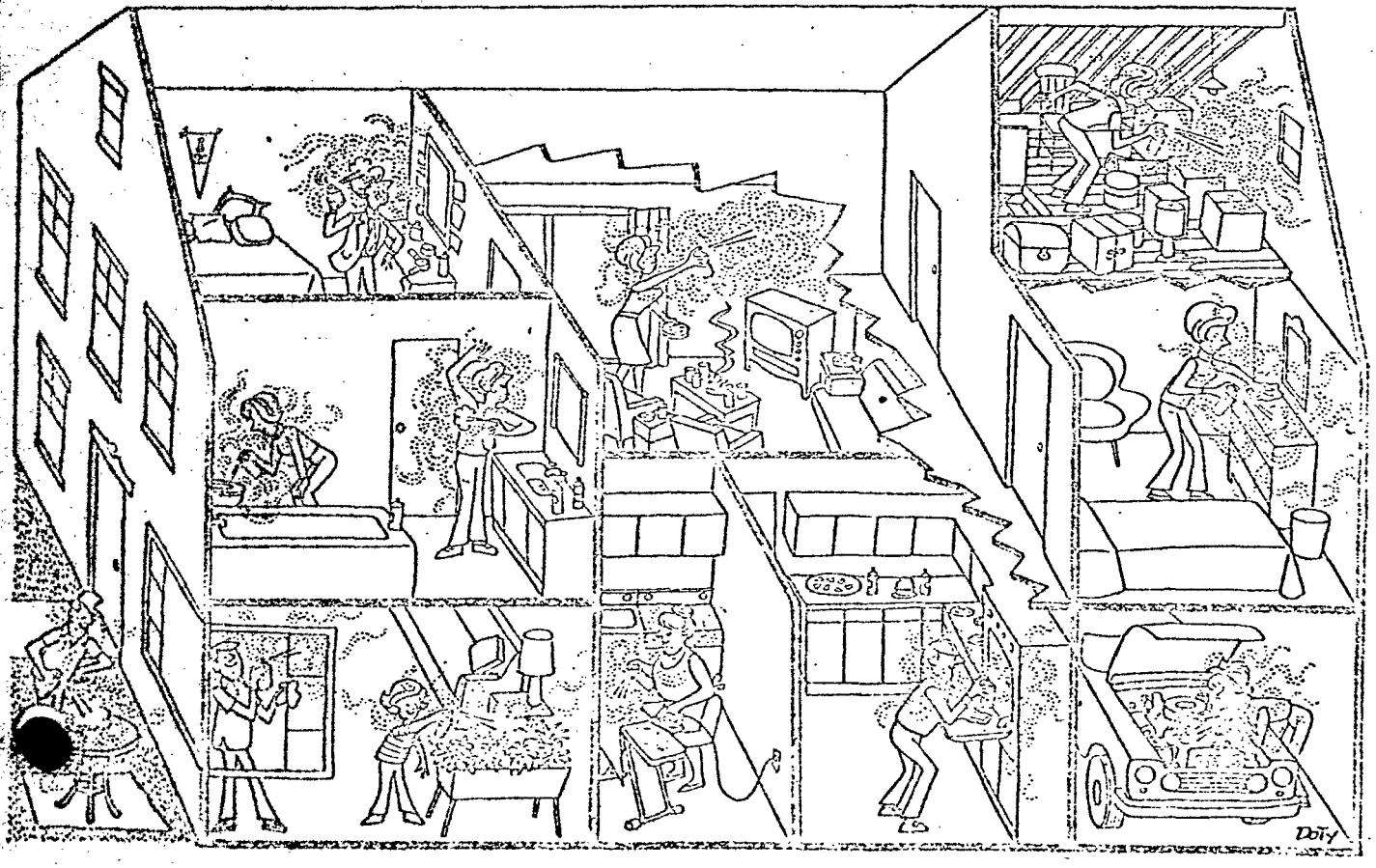
Vinyl chloride recall. In last month's report on the health problems associated with aerosol sprays, CU urged that vinyl chloride be banned as an aerosol propellant because the chemical has been linked to a rare form of liver cancer. After that issue went to press, the Food and Drug Administration announced the recall of 52 brands of aerosol products containing vinyl chloride. The recall involved two brands of consumer hair sprays manufactured by Clairol, Inc.—*Summer Blonde Aerosol Hair Spray* and *Miss Clairol Aerosol Hair Spray*—20 brands of professional hair sprays produced by Clairol and Bonat, Inc., and 30 aerosol products—medicated vaporizers, athlete's foot sprays, first-aid sprays and others—manufactured by the Shield Chemical Co. (The Shield products that have been recalled can be identified by code numbers of 3213 and below.) In a related action, the Environmental Protection Agency issued an emergency order to halt the sale of 28 brands of pesticide sprays containing vinyl chloride. An estimated 19,000 cans of these aerosol products are believed to be on the market.

attack? There is a wealth of speculation and investigation, but the answer remains elusive.

Last January, the U.S. Food and Drug Administration announced the recall of two defective aerosol asthma sprays, *Vaponefrin* and *Asthma Nefrin*. The sprays could pose a "potentially serious health hazard to users," the FDA said, because they may deliver excessive doses of the active ingredient, epinephrine, also a potent heart stimulant. A prescription aerosol spray product for asthmatics, *VAPO-N-ISO Metermatic*, which could release up to five times the normal dose of isoproterenol, had been recalled a month earlier by the manufacturer.

While industry spokesmen acknowledge that fluorocarbon propellants can affect the heart, they stress the exceedingly high concentrations required to produce cardiac changes in laboratory animals. Those concentrations are not reached during normal everyday use of aerosol products. But it is possible that some individuals may be more susceptible than others to fluorocarbon propellants. Certain diseases could alter the rate at which they are absorbed and eliminated from the bloodstream. Because fluorocarbons affect heart rhythm, CU's medical consultants warn patients who are being treated for heart disease to avoid the use of *any* aerosol spray products.

The toxic effects of fluorocarbons apparently extend beyond the heart. Studies at the Southwest Foundation for Research and Education, in San Antonio, showed that two propellants, fluorocarbon 11 and fluorocarbon 21, caused



changes in the metabolism of rabbit lung tissue. The same metabolic systems occur in human lung tissue, according to biochemist James Bollinger.

Again, the damage occurred at high concentrations. Would there be similar effects at concentrations built up during normal use of aerosol products? Until that question is answered, Dr. Bollinger recommends that "individuals who use spray products should be made aware that there could be subtle toxicological effects." He suggests that people with allergies, lung or heart disease be particularly cautious.

PROBLEM: BLISTERS, RASHES

Although the effects of aerosol propellants on major internal organs remain a subject of intense controversy, there is no doubt that the propellants can irritate the exposed portions of the body. Consulting dermatologists told CU that propellants can cause freezing, burning, blistering, and inflammation if applied too close to the skin. In fact, they are used therapeutically for certain skin problems to remove a layer of skin.

Combined with an active ingredient (for example, in an underarm deodorant spray) propellants may present special problems. If the user is allergic to any of the aerosol's antibacterial or preservative agents, the irritation caused by the propellant might worsen the allergic reaction.

More publicized hazards surround female genital sprays, products that Consumers Union warned against more than two years ago (CONSUMER REPORTS, January 1972). No more effective than soap and water in eliminating odors, they can produce itching, burning, and irritation if held too close to the body during application. In 1972, their drugstore sales fell off 25 per cent.

Since our 1972 report, the antibacterial agent hexachlorophene was banned from female genital sprays. Now, the products consist mainly of a propellant and a fragrance, making them a very costly way to apply perfume. The FDA continues to receive consumer complaints about them, indicating that hexachlorophene was not the only culprit. Last June, the FDA proposed that a lengthy mandatory warning be placed on their labels, and the words "hygiene" or "hygienic" be prohibited. At the time this report is being written, the FDA still has not made the proposals final. We urge that it do so at once. And we continue to urge consumers not to use genital sprays.

The eyes are perhaps most vulnerable to the impact of aerosol sprays. Tiny aerosol particles can be driven with great speed into the cornea. Damage is usually minor and easily treated, but in some cases permanent scarring and ulceration occur. In addition, the solvents used in some aerosol sprays can damage contact lenses. The ophthalmologists CU consulted urged consumers to use the "greatest of caution" in keeping sprays away from their eyes.

PROBLEM: POTENTIAL LIVER DAMAGE

Although fluorocarbons are the most common propellants, they are not the only ones used in aerosol products. Others include isobutane, propane, and vinyl chloride. Suspicion has most recently centered on vinyl chloride, an organic chemical known, in high concentrations, to damage the liver of experimental animals. Five deaths from angiosarcoma—an extremely rare liver cancer—have occurred among vinyl chloride workers at a single plant in Louisville, Ky., and two more workers have contracted the fatal disease. Several cases of serious liver damage have been found among workers at a vinyl chloride plant in Niagara Falls, N.Y. In long-term experiments conducted in Italy by a University of Bologna scientist, liver tumors appeared in rats exposed to concentrations of vinyl chloride as low as 250 parts per million in the air. According to a 1964 report, vinyl chloride levels can reach 250 parts per million during hair spray use.

The Health Research Group, a consumer-advocacy organization, petitioned the Government in February to ban the use of vinyl chloride in aerosol products. Because of the clustering of liver ailments among vinyl chloride workers and the animal research linking the chemical to cancer, CU believes that this propellant should be banned until its safety is proved. Studies are now being conducted by Government and industry to further clarify its toxicity.

PROBLEM: BURNS

Certain aerosol propellant gases and solvents present a more immediate hazard to the consumer: the danger of burns. Of 69 cases of aerosol-related injuries examined in depth by the Consumer Product Safety Commission, eight involved vapor ignition.

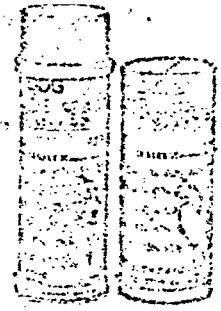
The flammability potential of aerosol sprays was examined in 1969 by Cornell Aeronautical Laboratory (now called Calspan Corporation), a commercial laboratory in Buffalo, N.Y. Its tests revealed that the flammability hazards did not always correlate with the label warnings. The tests also uncovered a wide range of flammability among aerosols in the same product line. Some hair sprays were noncombustible; others could burn like a torch.

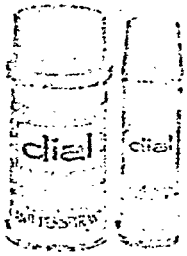
The laboratory recommended that a more meaningful set of flammability warnings be required, and that the product in an aerosol container "be no more hazardous than need be to accomplish its intended purpose." What has happened in the past five years to improve the situation? "Nothing much," according to engineer Richard Reinnagel, author of the 1969 report. Labeling is still confusing, he says, and many aerosols are still using flammable or combustible propellants.

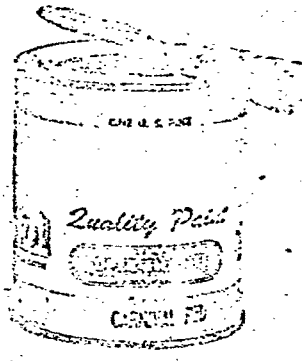
In some aerosol products, lethal effects have been attributed to the solvent. Last August, the FDA recalled six brands of aerosol decongestants that contained the solvent trichloroethane, which acts as a general anesthetic at high concentrations, and can disturb the normal rhythm of the heart. The agency also proposed to reclassify trichloroethane as "not generally recognized as safe and effective for use in drugs to be inhaled." FDA action was based on reports of 21 deaths from use of the aerosol decongestants, including the accidental death of a 5-year-old Cleveland girl. (At least 19 of the other 20 deaths resulted from deliberate concentration and inhalation of the products' vapors, an FDA spokesman reports.)

There are other potentially toxic agents included in some aerosol sprays. According to several investigators CU consulted, some active ingredients may be more hazardous than the propellant. Explained one scientist: "They can affect the lungs; some may enter the bloodstream. They can change the absorption of the propellant. But little work has been done in assessing their efforts."

Industry research has focused on propellants because there

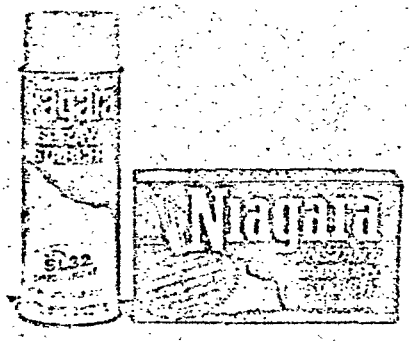


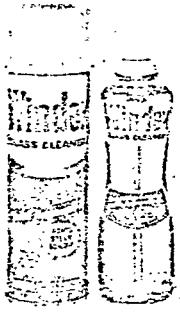


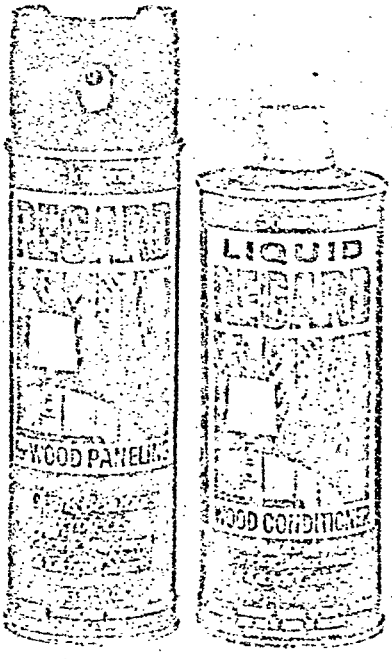


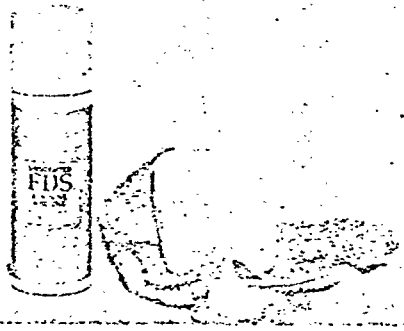
AEROSOLS AND ALTERNATIVES

You may feel helpless if you are not armed with aerosols, but most aerosol sprays can be easily replaced. Because of the possible safety and health hazards of aerosol spray products—as well as their costliness—we direct your attention to alternative, nonpressurized products. This is just a small sampling, ranging from floor wax to laundry starch to ~~female genital spray~~ (which can profitably be replaced by a washcloth and soap). Whenever you buy a product for home use, look for other types of products that can do the same job as aerosol sprays.









are relatively few of them, and propellants are common to all aerosol products. In testimony before CPSC hearings on aerosol safety, Dr. Robert Giovacchini, chairman of the inter-industry aerosol safety committee, conceded that published studies on the safety of ingredients other than propellants were scarce. Chemicals that have been used in nonaerosol form are not routinely tested for safety when packaged for aerosol delivery. Whether the new combinations or new concentrations used in such pressurized products present a hazard when inhaled is unknown.

PROBLEM: LUNG DISEASE

What *is* known is that many aerosol products are propelled as fine particles that can penetrate the deepest passages of the lungs, where they can enter the bloodstream and be carried to vital organs. In fact, the fastest way to absorb a chemical into the body (aside from injecting it directly into a vein) is to inhale it.

There is little information about what happens to aerosol particles once they are in the bloodstream. But there is growing evidence that certain aerosol preparations can cause lung changes and even lung diseases. Several years ago, a young physical therapist came to the U.S. Army's Fitzsimons General Hospital in Denver complaining of lack of endurance. Tests showed she had sarcoidosis, a disease of unknown cause that is characterized by the formation of granulomas (a type of inflammatory reaction) in the lung. Although sarcoidosis is not believed to be contagious, the woman's roommate was hospitalized in another institution with the same disease at the same time. What was the common denominator? Close questioning revealed that both women had used the same type of aerosol underarm deodorant for more than two years. One of the young women reported experiencing a feeling of strangulation and a slight cough when she used the spray.

Subsequently, the physicians encountered 10 young men with similar lung findings who had used the same deodorant spray or one other brand. In laboratory experiments, guinea pigs exposed to the spray of the two deodorant brands also developed lung changes. The Fitzsimons investigators would not disclose the names of the brands because many commercial brands contain similar active ingredients, they explained. In view of their human and animal findings, the scientists raised the possibility that "underarm aerosol deodorants may cause lung lesions in certain susceptible humans, with sufficiently long exposure time."

That conclusion was reinforced by a recent finding by Dr. Robert Drew of the National Institute of Environmental Health Sciences: Exposure to compounds commonly used in antiperspirant preparations (aluminum salts), will cause changes in the lungs of rabbits and hamsters. And the compound is not readily removed from the lungs, as previously thought, but can remain there for months, producing granulomas and other effects.

Last autumn, Gillette Co. recalled two new brands of antiperspirant sprays that had caused "mild irritation" in monkey lungs. Luckily, those products had barely begun to sell when the discovery was made. But well-established products of another company, Procter & Gamble Co., contained an ingredient (zirconium salt) similar to the one suspected by Gillette of causing irritation. The FDA collected the test data on the spray deodorants involved and concluded they "do not indicate the need for regulatory action." Procter & Gamble's products, including *Sure*, did not produce the same degree of lung irritation, and are still on the market. When the FDA requested animal data and data on human complaints from other firms manufacturing spray deodorant products, they were refused "partially or completely" in every instance.

Deodorants and antiperspirants are the best-selling aerosols, followed by hair-care products. Those runner-ups, particularly hair sprays, have also come under medical scrutiny. Hair sprays are usually used in confined areas—hairdressing shops or bathrooms—and their mist is emitted near the face. Some researchers believe that hair lacquer collects in human lung tissue and causes an abnormal condition known as thesaurosis, or "storage disease," seen as shadows on chest X-ray film. Many physicians have seen patients whom they thought to be suffering from the effects of hair-spray inhalation. Those patients had lung abnormalities that could not be explained in any other way; when they stopped using hair spray, the abnormalities often cleared dramatically.

The question of thesaurosis—illness or illusion?—has not yet been settled. A study of beauticians has just been completed in Utah, but the data is not yet ready for release. An even larger study getting under way in the Seattle area aims at uncovering any heart or lung disease problems associated with exposure to hair spray.

Recent research at Yale reveals that hair-spray exposure can temporarily alter lung function in healthy persons. The changes reflect narrowing of the small air passages in the lungs. Some of the men and women tested complained of chest tightness and difficulty in breathing during the experiment. The investigators expressed concern "that a commonly used consumer product should have a systematic effect on the airways of healthy persons. It is possible that repeated exposures to aerosol products such as hair spray are causal factors in some cases of asthma and bronchitis."

As anti-aerosol evidence becomes more impressive, the Government is considering tightening regulations over aerosol labeling, contents, and the package itself. The FDA proposed that the labels of aerosol food, drug, and cosmetic products be required to bear a warning against intentional inhalation. Although many aerosol manufacturers have voluntarily added the warning, CU hopes the FDA will act quickly to make it mandatory. The FDA is currently sponsoring several studies on the safety of aerosol components, including propellants and active ingredients.

PROBLEM: EXPLOSIONS

A more hopeful source of Government action on some aerosol products is the Consumer Product Safety Commission. The commission has jurisdiction over many household aerosols, including cleaners, pet products, and adhesives. Last August, the CPSC banned 13 spray adhesives because of evidence linking them to chromosome damage and birth defects. But subsequent evidence refuted that conclusion, and the ban was lifted.

Last February, the CPSC held public hearings on aerosol safety. Testimony by consumer groups and industry representatives emphasized the issue of potential explosions. When aerosol cans are heated above a certain temperature, the increased internal pressure may cause the can to burst, scattering metal fragments at high velocities. Federal regulations require label warnings against incineration, puncturing, or high heat, but thousands of accidents continue to occur. Most happen when label warnings are not read or not heeded. Aerosol cans are left exposed to the sun in automobiles, placed on hot surfaces or near heaters, or burned in trash fires. But some accidents are unprovoked, caused by defects in the containers.

Many methods have been proposed for reducing the risk of explosion, usually by building an area of weakness into the can. When pressure reaches a certain point, that area gives way, releasing the contents of the can quickly. The same effect can be achieved by a built-in puncturing device that pierces the can when high pressure distorts part of the container. The results are often messy, but not as dangerous as an explosion.

The American Can Company, one of the largest manufacturers in the field, has developed a safety mechanism and built it into 10 million cans. According to market manager J. H. Fredette, the device adds only one-tenth of a penny to production costs for each container. But other manufacturers seem to be lagging behind.

If industry continues to dawdle, despite the thousands of injuries their products are causing each year, CU believes that Government regulations should be instituted to hurry them along. According to industry testimony, "We all agree that even one injury is one too many." Their actions have not borne out their words, in our judgment.

Aerosol cans should also be designed to give particular protection to children. With their bright colors and funny noises, aerosols attract a youngster's curiosity. About one-fifth of aerosol-related accidents occur to children under five, according to injury statistics compiled by the CPSC. A new provision of the Poison Prevention Act requires that all aerosol oven cleaners and other caustic products have child-resistant closures. The technology is available and should be applied to all aerosol spray cans.

As a result of the public hearings, CPSC commissioners are considering issuing new regulations for aerosol products. Such regulations may include new safety standards for can design and the selective banning of aerosol products with caustic or carcinogenic contents. CU fully supports such measures. We would also like to see label warnings displayed more prominently; a requirement that aerosol firms hand over test data and consumer complaints to Government agencies upon request; and an educational program to inform the public that aerosols are not necessarily safe. The Health Research Group has called for premarket testing for safety of all aerosol products. We agree with that idea in principle, and would like to see it instituted if shown to be practical. (The problem is to find enough qualified laboratories to do the research.)

Perhaps the most worrisome aspect of the aerosol question is the lack of knowledge of long-range effects. Dr. Albert Kolbye, head of a Government Inter-Bureau Aerosol Committee, refers to a "lack of information on long-term, low-level exposure, the kind the average housewife, working man, or child would get from regular use of personal and household aerosol products." Industry argues that aerosols have been around a long time, 27 years, and that people aren't keeling over from them or developing the symptoms of chronic disease. But 60 per cent of all aerosols ever produced have been distributed in the last seven years. And chronic diseases often take many years to develop.

RECOMMENDATIONS

In sum, evidence of health impairment from aerosol usage is imprecise, but reports of harmful effects are numerous enough to warrant special caution. There are likely to be segments of the population, such as heart patients or those with chronic bronchitis, emphysema, or asthma, who are particularly susceptible to injury. Not all vulnerable groups have yet been clearly identified.

As a result, CU's medical consultants warn against the indiscriminate use of aerosol spray products in the home, no matter how healthy you are, or think you are. While there may be little cause for concern about occasional use, it is the prolonged and repeated exposure to aerosol sprays that CU's medical consultants consider hazardous. People with known lung or heart disease should avoid all such products.

Substitutes are available for most aerosol products. (See photographs, page 377.) But if you must use aerosol sprays in the home, spray in a well-ventilated area. Keep the spray away from your eyes, and leave the sprayed area as quickly as possible.

For cost-conscious consumers, it may be useful to know that aerosols are also hazardous to the pocketbook. Several surveys have shown that products in aerosol cans tend to be more expensive than comparable products in simple, non-pressurized containers. In some cases, the aerosol versions are three or even four times more expensive. When you buy an aerosol product you are paying extra for a strong can, elaborate packing methods, the valve, a dip tube, and an overcap. You are also paying for the propellant, which in some products outweighs the active ingredients.

In this time of shortages, it is worth emphasizing that aerosol containers require heavy metal materials in place of cheaper, lighter substances. Thus, for many reasons—medical, financial, and environmental—aerosol sprays are not a good buy.

QUOTE WITHOUT COMMENT

"Until fairly recently, lemons attracted about as much public attention as any other fruit, which is to say, little. . . . Then Madison Avenue discovered, almost by accident, the lemon's principal virtue. When added to a consumer product—it hardly mattered what—lemons had the effect of rapidly hyping that product's sales. . . . But much of the lemon in household products isn't lemon at all. It's dipentene, a chemical . . . that only smells like lemons."—THE WALL STREET JOURNAL.

1980 ban

Aerosol can bill hear ing scheduled

By Dennis Baughman
R-J Legislative Bureau

CARSON CITY — We use so many of them it is unimaginable. And the results could be catastrophic.

Aerosol cans, some scientists have predicted, could destroy life as we know it on this planet by the year 2000. And they warn if something is not done immediately, it more than likely could happen.

The Assembly Environment and Public Resources Committee will conduct a public hearing at 3 p.m. Wednesday on AB 556, which seeks to ban the sale or possession of aerosol cans in Nevada by 1980.

So far the measure has the support of the Retail Merchants Bureau and the Las Vegas Chamber of Commerce.

Scientists have said that fluorocarbon chemicals released by certain aerosol cans may be dangerously depleting the earth's protective layer of ozone with one possible result being an alarming increase in skin cancer.

The aerosol propellant chemicals slowly rise above the earth where years later they apparently attack the ozone layer of the upper atmosphere that protects people from the sun's most lethal ultraviolet rays.

Some national reports have said aerosols have probably already doomed more people than were killed by the atomic bomb dropped on Hiroshima, and even an immediate ban will not save them.

Some scientists maintain the gases have begun to destroy the ozone and will deplete it further during the next decade. That will allow enough ultraviolet radiation to reach the earth's surface to cause 150,000 skin cancers in one year, they say.

The annual death toll will be 6,000, and neither the ozone nor the cancer rate will return to normal for at least a century. They say our system could not adapt to a disruption in a matter of decades of a balance which took several hundred million years to evolve.

One meteorologist says the chances are one in ten a major depletion or redistribution of the ozone could radically alter global climate — even to the extent of bringing on a new ice age.

Magazines have reported the fluorocarbon-dependent industries are an $8 billion business employing 200,000 workers. Manufacturers and Teamsters Union officials have contended the ban on aerosols would result in 6,000 persons losing their jobs in California alone.

Assembly John Vergiels, D-Las Vegas, said he introduced the bill because of the alarming reports he has read recently. "But a lot of people think it's a silly bill because they don't realize the possible complications," he said.

Dr. William Edwards of the State Health Division said he has read articles on the possible dangers of aerosols, but has not compiled any data.

He said no scientists or interested citizens have contacted his office about the aerosols, and Vergiels said he has not received any negative reactions so far from his measure.

Similar bills have been introduced in Congress, but are not given much chance of passage. Sponsors say it is tough to let loose with a Buck Rogers story — there is no apparent problem, nobody is falling down dead.

A bill imposing a two-year moratorium on the sale of many aerosol cans in California was rejected last week by the Senate Finance Committee on a 2-8 vote.

F. Sherwood Rowland, a chemist at the University of California's Irvine campus who discovered the apparent aerosol plague last year, testified before the committee that the atmosphere can handle only 20,000 tons of fluorocarbons a year.

Currently, about 500,000 tons of the chemicals are released worldwide, he said, half of which come from aerosol cans and the remainder from refrigerants and solvents.

The result of such massive releases could be "catastrophic," Rowland said. Aerosol cans, he said, have been in production for more than 25 years.

There is the other side of the street, however. Some scientists have said they will know for certain within three to five years how serious the ozone depletion problem is.

And some have said that no experimental evidence proves the gases are depleting the upper atmosphere's supply of the protector.

The Retail Merchants Bureau and the Las Vegas Chamber of Commerce both support Vergiels' bill because they feel the use of aerosol containers for certain products may be dangerous to the health of the operator.

ASSEMBLYMAN JOHN VERGIELS
STATE CAPITOL BLDG
CARSON CITY NV.89701

EX. "A"

2- 409

THE RETAIL MERCHANTS BUREAU IS IN SUPPORT OF AB556 WE BELIEVE THAT THE USE OF AEROSOL CONTAINERS FOR CERTAIN PRODUCTS MAY BE DANGEROUS TO THE HEALTH OF THE OPERATOR, HOWEVER WE QUESTION THE ADVISABILITY OF A MISDEMEANOR CHARGE AGAINST A CITIZEN UTILIZING SUCH A PRODUCT, RATHER WE BELIEVE IT SHOULD BE UNLAWFUL FOR MERCHANTS TO MARKET AEROSOL PRODUCTS. WE ALSO OBJECT TO TOURIST VISITORS BEING SUBJECTED TO PENALTIES FOR POSSESSING AEROSOL CONTAINERS. PERHAPS THERE IS SOMEWAY TO EXCLUDE THESE VISITORS FROM AB556.

ANN HALL, PRESIDENT
RETAIL MERCHANTS BUREAU

1845 EST

MGMRNOA RNO

THE GREATER LAS VEGAS CHAMBER OF COMMERCE, WHILE OPPOSED TO RESTRICTIONS IMPOSED ON BUSINESS AND INDUSTRY, IS IN SUPPORT OF A.B. 556. OUR SUPPORT IS BASED ON THE REASONING EXPRESSED IN SECTION 2 OF A.B. 556. ADDITIONALLY, WE BELIEVE THAT THE USE OF AEROSOL CONTAINERS FOR SUCH PRODUCTS AS HAIR SPRAYS AND CONDITIONERS MAY WELL BE ENDANGERING THE HEALTH OF THOSE PERSONS USING SUCH PRODUCTS SINCE THEY INHALE A PORTION OF THE SPRAY. CONCERNING SECTION 4, WE CERTAINLY QUESTION THE ADVISABILITY OR LEGALITY OF A MISDEMEANOR CHARGE AGAINST A CITIZEN AND WOULD SUGGEST IT SHOULD BE AMENDED TO BE UNLAWFUL FOR MERCHANTS TO MARKET PRODUCTS IN AEROSOL CONTAINERS. WE WOULD ALSO OBJECT TO OUR NEVADA'S MILLIONS OF TOURIST VISITORS WHO WOULD BE STAYING IN HOTELS AND MOTELS FROM BEING SUBJECTED TO PANALTIES FOR POSSESSING AEROSOL CONTAINERS. PERHAPS THERE IS SOME WAY TO EXCLUDE THESE VISITORS FROM A.B. 556

R G TAYLOR PRESIDENT GREATER LAS VEGAS CHAMBER OF COMMERCE

1646 EST

MGMRNOA RNO

MEMORANDUM

Suggested provision for Nevada Geothermal Resources Act, Senate Bill No. 158.

Section 5 presently provides: "Any water and steam encountered during Geothermal exploration is subject to the appropriation procedures of chapter 533 and 534 of NRS."

Suggested addition is: ", except that extraction or utilization of the heat contained therein shall not be subject to such appropriation procedures, and water or steam utilized in drilling and producing operations or for cooling or condensing purposes in electric power generating plants shall not be subject to such appropriation procedures."

EX. "C

SPECIAL FISHING PERMITS

2-411

AGENCY	# OF BADGES	BADGE NUMBER
Child Haven - did not renew for 74-75 FY		301
(30)		
So. Nv. Children's Home - did not renew for 74-75 FY		302
(30)		
Nv. Youth Trng. Center - #303 ret'd - replaced w/#308		303
(20 ret'd w/1 broken - & 10 lost)		
L.V. Mental Health Center	15	304
Nv. Mental Health Institute	15	305
So. Nv. Mental Retardation Center	10	306
Reno Mental Health Center	20	307
Nv. Youth Training Center	30	308
Variety School Activity	30	309
No. Nv. Children's Home	30	310
Total issued - 74-75 FY 150		311
Cost per badge $1.05		
		312
		313
		314