

# Coyote Poison: To Have or Have Not

The Environmental Protection Agency now is deciding whether to repeal its ban on the use of the poison Compound 1080 ('ten-eighty') against coyotes

By LINDA GARMON

Jim Barron is a rancher on the mesquite-covered, rolling range of Spur, Tex. Several years ago, he purchased 100 lambs, which he proceeded to place in an area surrounded by a barbed-wire fence. Eight days later, Barron already had lost 12 of those lambs to coyotes. He shipped out the remaining lambs and got out of the sheep business. But this has not solved his coyote problem: Barron says he loses about 50 to 60 calves to the wild canines each year. He remembers when the predation problem on his Spur Headquarters Ranch was virtually nonexistent — before the government banned the use of a poisonous chemical called "Compound 1080" against predators.

Dick Randall has very different memories about the years before the ban. He was an employee then of the Fish and Wildlife Service in Baggs, Wyo., and often set out 1080-containing meat baits to battle coyotes. But Randall soon discovered that those baits also were killing black bears. "Even though bears were supposedly protected because they hibernate during the winter, baits were often set out before they went into their dens," says Randall, who now is with the public interest group Defenders of Wildlife. Randall says use of Compound 1080 also victimized several other "non-target" animals, including birds.

Barron and Randall were among the 150 persons who, beginning in March, presented either the pros or cons of 1080 at hearings the Environmental Protection Agency conducted as a first step in deciding whether to repeal its ban on the white, crystalline poison. In August, those hearings ended; now it is up to an EPA administrative law judge to render a preliminary decision on the fate of Compound 1080 as a predicide (predator poison).

Compound 1080 — which was originally patented (and is still legally used) in the United States for rodent control — had at one time been widely used as coyote poison. Then, in 1972, former president Richard Nixon signed an executive order banning such predacidal use of it on federal lands; shortly thereafter, EPA canceled all predacidal uses of 1080. But early this year, President Reagan revoked the execu-

tive ban, and since then, proponents of the compound have been pressuring EPA to make an analogous move. (The EPA ban supersedes the executive order.)

The 1080 proponents charge that the ban has had a severe economic impact on the lamb and woolgrowing industries. One witness at the hearings, Gary A. Littauer of the New Mexico Department of Agriculture, compared data from sheep loss surveys taken before and after the ban in Colorado, Idaho, Montana, Nebraska, New Mexico, South Dakota, Texas and Wyoming. In all states but Nebraska, the reported percentage of lambs lost to coyotes as much as doubled after the 1080 cancellations, Littauer testified.

In addition, said Major L. Boddicker of the Colorado State University Animal Damage Control extension program, the cost of controlling this increased predation should be considered. In April 1981, Boddicker testified, the Vernon Churchill Ranch in Colorado requested assistance from the extension program because it was losing one to three lambs per day to coyotes. Animal damage control officials proceeded to use traps, snares, two hours of aerial search time and other conventional methods to kill four coyotes. Had the animal damage control officials been able to scatter single lethal dose baits — 1-ounce balls of meat or fat containing 3 to 5 milligrams of 1080 — the same job could have been accomplished for a mere \$71, Boddicker said. The actual bill came to \$1,520.50. "This type of expense is hurting some of our [ranchers]," Boddicker told SCIENCE NEWS, "and when they have to sell out... we can end up with 40 subdivision homes on their land." Says Boddicker, "That's no good for wildlife."

But 1080 opponents maintain there really is no clear evidence that predation has in fact increased since the ban. Some of the data used to support that contention come from biased mail-survey questionnaires that may generate inaccurate figures, says biostatistics professor William Kalsbeek of the University of North Carolina in Chapel Hill. Kalsbeek says that one recent survey sent to producers in New Mexico included a cover letter that contained the following statements: "Today the New Mexico livestock industry is faced with a serious problem that demands immediate action. The problem is



USDA/Stienhouse

the loss of lambs, calves and wildlife to predators. In order to solve this problem, information on losses and their economic impact is needed."

Moreover, 1080 opponents claim, there clearly are other factors besides predation that have contributed to the decline in the sheep-raising industry. For example, says Anne Marie Ellis of Defenders of Wildlife in Washington, D.C., annual U.S. wool consumption declined from more than 500 million pounds in 1955 to less than 250 million pounds in 1980. Competition from cheaper synthetic fibers is one reason for this shrinking demand, Ellis explains.

And even if predation has increased since the ban, 1080 opponents point out, there is relief for ranchers. "It must be remembered that the government influences the welfare of sheep producers in other ways than those regarding Compound 1080," economics professor E. Phillip LeVeen of the University of California at Berkeley testified at the hearings. "For example, the government currently subsidizes part of the costs of predator control by spending public resources to kill coyotes," LeVeen said. "In other words, any effects of the ban on Compound 1080 for predacidal use may be compensated by increased public expenditures that

## Applicants for 1080:

U.S. Department of Interior, Fish and Wildlife Service  
State of Wyoming *et al.* (Pacific Legal Foundation)  
State of Montana  
State of South Dakota  
Ranchers' Supply, Inc.

## Proponents of 1080:

Texas Department of Agriculture  
National Animal Damage Control Association  
American Farm Bureau Federation *et al.*  
Campbell County Predatory Association  
Claire Terrill of the American Society of Animal Science

## Opponents of 1080:

Defenders of Wildlife *et al.*  
National Wildlife Federation  
Friends of Animals, Inc.

## Neutral Parties:

U.S. Environmental Protection Agency  
U.S. Department of Agriculture

(\*has applied only for registration of the 1080 toxic collar)



A pack of coyotes surveys the range (left), animal control officials treat a sheep carcass with 1080 solution (center) and a golden eagle is killed after feeding on such a bait (right). (Latter two pictures taken before the 1080 ban.)

allow ranchers to continue raising sheep without having to expend their own resources for coyote controls," he said.

Another example of subsidization, LeVeen continued, is the wool incentive programs, which set target prices for wool to guarantee a certain degree of economic prosperity for the sheep industry. "If market prices are below this target price, the producers receive the difference in the form of a check from the government," he said. Between 1972 and 1978, total payments to wool growers via such subsidy programs came to more than \$193 million, said LeVeen. Thus, he said, built into our domestic policies are mechanisms for compensating the sheep-raising industry for the cost of the 1080 ban.

Ideally, LeVeen says, 1080 should be re-registered only if the costs of having the ban exceed the costs of *not* having the ban. EPA Administrator Anne M. Gorsuch says that in 1972, the agency believed that a major cost of no ban was the exposure of humans to a "significant hazard." Now, she says, that may have been an erroneous belief. After all, explains Gorsuch, "Compound 1080 has been widely used in the United States... to control rodents without any reported human fatality."

But Barry H. Rumack of the Rocky Mountain Poison Center in Denver, Colo., says EPA is ignoring the deaths in 1976 of three children exposed to a related rat-poisoning substance called "1081." Says Rumack, "The difference between 1080 and 1081 in terms of human poisoning is nonexistent."

Rumack testified that since 1974, officials at the poison center have been consulted on the treatment of approximately 100 cases of suspected 1080 and 1081 poisonings of humans and animals. "If Compound 1080 is reintroduced as a predacide, we at the Rocky Mountain Poison Center will undoubtedly encounter many more cases of poisonings due to the chemical," he said. And, he testified, there is no specific treatment or antidote for 1080 poisoning.

Compound 1080 is a synthetic derivative of fluoroacetate, which was first identified in nature as the main toxic component in the South African poisonous plant gifblaar (*Dichapetalum cymosum*). The chemical — also known as sodium monofluoroacetate (FCH<sub>2</sub>COONa)—exerts its toxic ef-

fect by blocking the body's citric acid (Krebs) cycle, an essential process for converting food into ATP and other "energy molecules." This in turn leads to cell death. Compound 1080 is a "supertoxin" Rumack said; "one teaspoon of 1080 contains enough lethal doses to kill 30 to 100 adults weighing 150 pounds." The compound's LD<sub>50</sub> (lethal dose that kills 50 percent of a test sample of animals) for coyotes is 0.1 milligrams of toxicant per kilogram of body weight.

Opponents of 1080 believe this supertoxin's effect on wildlife other than coyotes is another "cost" to consider in the cost-benefit analysis of having no ban. Says Randall, the list of 1080-poisoned non-target species he found when he worked for the FWS goes beyond black bears: "Other poisoned... species I found include... badger, pine marten, mink, bobcat, weasel, golden eagle, magpie, prairie falcon, sharp-shinned hawk, Canada jay, rough-legged hawk, great horned owl and skunk."

Throughout the hearings several 1080 proponents charged that there is no objective evidence of such non-target poisoning due to predacidal use of the compound. But Randall testified that beginning in 1969, FWS officials added a tracer material (zinc and cadmium sulfide) to the poison so that they could "distinguish between their 1080 and someone else's 1080 when a lawsuit was filed by an irate citizen whose dog was killed." Under ultraviolet light, Randall could detect the telltale tracer in the digestive tract of carcasses — sometimes ones he found four or five miles from a 1080 bait station.

Compound 1080 proponent Roy McBride, a "self-employed predator control biologist" in Alpine, Tex., says that such non-target killing could be avoided if use of the poison is restricted to a product of his design: the toxic collar. This 1080-containing rubber reservoir is designed to be worn by "sacrificial" sheep around the neck — where predators are thought to attack most often. This delivery mechanism has been used experimentally in research conducted by Guy Connolly of the FWS in Twin Falls, Idaho. "Approximately 70 percent of coyote attacks on collared livestock resulted in puncture of the collars and presumably in death of the attacking coyotes," Connolly testified at the

hearings.

But Ellis says that in Connolly's test, only 10 percent of coyotes thought to have been killed during these field trials were actually found by researchers; so the effectiveness of collars is in doubt. In addition, she says, 1080 collars can easily be punctured by barbed wire, cactus and bushes, leaking 1080 that in turn could be absorbed through the sheep's skin. Finally, she says, even if EPA were to restrict use of 1080 to the collar, the potential for misuse would be great.

In fact, such misuse may already be in progress. "Within the last six months, I have been informed that there are large amounts of 1080 [intended for use in predator control] in Wyoming," Randall testified at the hearings. "My informant tells me that the 1080 was signed for by a member of the Carbon County Animal Control Board who is also a County Commissioner. He told me that he has a copy of the order, but that he literally fears for his life if his identity is revealed," Randall said.

But Carbon County Commissioner Bob Grieve told SCIENCE NEWS that there is no person who even fits the bill for the alleged signer of 1080: None of the commissioners also serve on the animal control board. Grieve says that while the county keeps some 1080 on hand for rodent control, charges of illegal predacidal use of the poison are simply inaccurate. Despite Grieve's assertion, Randall claims illegal use of 1080 still is highly probable. "You're talking about vast areas of space, and no agency has funds to monitor what goes on," he says.

This misuse would magnify the "uncertainty inherent in the introduction of a toxic chemical that has broad effects on wildlife," says LeVeen. And given that uncertainty, he says, "the continuation of the ban on predacidal use of Compound 1080 seems the most prudent course."

Whether EPA agrees with such an assessment remains to be seen. The decision of the administrative law judge is due Nov. 1. Then, Gorsuch has the option of upholding or reversing that judge's opinion. In any event, whatever she decides is not likely to be the final word on the matter: A compromise decision is not probable, and there is little doubt that any decision will be appealed by either the proponents or the opponents of 1080. □