giura's results, though not published, were nevertheless leaked in 1973 to members of the laetrile movement, putting the institute under both public and scientific pressure to resolve the issue. What has happened since is that laetrile has been put to test in no less than 14 animal tumor systems. These experiments, along with Sugiura's, will be published early next year in the *Journal of Surgical Oncology*. But the results, in another departure from usual practice, were announced on 15 June. They constitute a dominant negative for laetrile in animal systems. "Laetrile showed no beneficial effects against any of these types of cancer," stated the Sloan-Kettering press release.

Good is careful to restrict his conclusions to what the experiments test, the effect of laetrile on animal cancers. "We don't want to be put in the position of saying that laetrile has no action. It is conceivable that laetrile might have some effect on well being or pain, which does not show up in animal experiments," Good remarks. The Sloan-Kettering researchers conclude that there is no scientific case for taking laetrile to clinical trials although "other considerations may require that one be conducted."

Sugiura's position differs from that of his colleagues. He stands by his original findings, which he has repeated in the same system, and with similar results in two other systems. He continues to believe that laetrile is not a cure for cancer but is a palliative agent. In the article to

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Waterfowl Hunters Must Give Up Lead Shot

Waterfowl hunters are now having to accept regulations that ban the use of lead shot in heavily hunted areas. Large numbers of ducks and geese are believed to be poisoned from the ingestion of such shot, which they apparently mistake for grit or edible seeds and pick up from river, bay, and marsh bottoms.

In a typical year the fall flight of migratory waterfowl in North America exceeds 100 million birds, with somewhat less than half that number destined to fall to hunters' guns or to die from disease or other causes before the next nesting season.

The U.S. Fish and Wildlife Service (FWS) believes that as many as 2.4 million waterfowl die from lead poisoning each year, to say nothing of sublethal effects that make millions of other birds more vulnerable to disease and predation. Each year's gunning season results in some 3000 tons of shot being deposited over bottom sediments where it can be picked up readily, both by diving ducks and by dabbling ducks.

Over the past two seasons the FWS has required hunters along parts of the Atlantic and Mississippi flyways to switch from lead to nontoxic steel shot. By next fall the regulations will apply to parts of the Central and Pacific flyways as well.

A leading scientific investigator of the lead shot problem has been Frank C. Bellrose of the Illinois Natural History Survey. Back in the 1950's, Bellrose studied numerous die-offs of waterfowl that had occurred over a 20-year period and conducted various dosing experiments. In one of the latter, some 4000 mallards were trapped, and half of the birds were dosed with lead shot before all were banded and released.

From the different band recovery rates, Bellrose concluded that about 4 percent of the mallards in the Mississippi flyway die from lead poisoning each year and that another 1 percent are afflicted but are bagged by hunters.

Estimates as to how much lead poisoning reduces the breeding population of the various waterfowl species are necessarily subject to wide error. But Robert Smith, FWS coordinator of the steel shot program, and his colleagues at the Service are convinced that the scientific basis for the mandatory switch to steel shot is more than adequate.

Drawing by Richard Pellicci

Nevertheless, many hunters—and quite a few state game commissions—are against the switch, either opposing it outright or demanding that it be delayed until enough is known to allow the "hot spots," or worst problem areas, to be pinpointed. One of the concerns underlying this opposition is a widespread belief that, despite all test results to the contrary, steel shot is an ineffective load and will cripple more birds than it will save. Among some hunters there seems also to be a largely unspoken—and wholly unjustified—belief that the "antihunters" are responsible for the lead shot ban.

In the fall of 1976, the National Rifle Association (NRA), a group best known for its opposition to gun control legislation, filed suit to stop implementation of the steel shot regulations, arguing that the environmental impact statement was inadequate and that the FWS had abused its discretion. But the NRA lost at the district court level and is now given little chance of winning on appeal. The National Wildlife Federation (NWF), which like the NRA is made up largely of hunters (at least in its voting membership), has intervened on the side of the FWS in the belief that the switch to steel shot is long overdue. Several years ago, in commenting on an early FWS proposal for the switch, Thomas L. Kimball, the NWF's executive vice president, observed that, inasmuch as private industry was required to take extraordinary steps to reduce or eliminate its emissions of lead to the environment, duck hunters certainly should be amenable to giving up lead shot. "What is sauce for the goose is sauce for the gander," Kimball said.

A Mixed Verdict on NBC Nuclear Waste Documentary

Almost a year ago, on 26 January, NBC-TV presented in prime time a documentary entitled "Danger! Radioactive Waste" which left people associated with the nuclear industry outraged. They regarded the documentary as grievously lacking in balance and perspective, shot through with factual errors, and characterized by emotion-engendering production tricks such as beginning each new sequence with the ominous clicking of a Geiger counter.

Many of those who took offense at the program wrote letters of protest to the Federal Communications Commission (FCC)—indeed, such letters are reported to have been so numerous (250 of them,

be published next year, of which he is a coauthor, he states that his belief is based "on his own observations reported with his experiments which include inhibition of lung metastases [secondary tumors], temporary initial stoppage of growth of small primaries, inhibition of the appearance of new tumors, and the better health and appearance of treated mice."

Stock makes clear that he does not say Sugiura's results are wrong. But he and Good believe that an important test for choosing between Sugiura's results and his colleagues' was a blind experiment in which the mice were injected by others and Sugiura, who did the pathology, was not told which mice were treated with laetrile and which were the controls. Although the system was the same as that of Sugiura's first six experiments, in this case laetrile turned out to possess no anticancer activity.

If the inference is made that the results with the 14 tumor systems are more likely to be true, Sugiura's results are an anomaly. No immediate explanation is available, but perhaps none is necessary: anomalies are a common feature of the scientific landscape and there is only time to resolve the most interesting.

The agree-to-differ approach is not acceptable to Second Opinion. In a 50-page article* issued this month, the group contends that the Sloan-Kettering report on laetrile is "incomplete and scientifically invalid." The group's press conference was cosponsored by the laetrile movement, but this was a mere alliance

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by an FCC count) as to suggest that an organized campaign had been mounted. But the Atomic Industrial Forum, the American Nuclear Society, and several other parties chose to direct their grievances not to the FCC (which has taken no action with respect to the documentary) but to the National News Council (NNC), a still relatively obscure organization established in 1973 as a private, unofficial body of 18 persons drawn from journalism and other fields such as law, education, and civil rights. The NNC could offer the industry groups no formal redress, but it could pass judgment on the merits of their complaints.

Recently, after an investigation, the news council pronounced a mixed verdict. NBC was exonerated on some of the major charges but was found at fault with respect to parts of the documentary which could well have led viewers to think that, in two specific instances, radiation exposures may have caused sickness or severe genetic damage in livestock and humans.

The NNC found no merit in the charges that the documentary lacked balance and perspective. The NNC said "we applaud NBC for bringing this substantial controversy to the attention of its viewers," and, in one philosophical aside, observed: "What is essential in a documentary is that its conclusions be based on verifiable information—that is on documentation—and not that it be fully objective. A major function of journalism is responsible interpretation."

But the council found evidence of "scare tactics, beyond the limits of sound journalism" with respect to the documentary's implicit suggestion that radiation exposures may have led to severe genetic harm to a worker at the now-closed Nuclear Fuel Services reprocessing plant at West Valley, New York, and to sickness and the death of cattle on farms near the low-level radioactive waste disposal facility at Maxey Flats, Kentucky. The worker at West Valley was shown in the documentary with his two young sons, both born after he left the reprocessing plant and both afflicted with Hurler's Syndrome, a rare genetic disease expected to lead to death by the age of ten. The worker plainly suspected that radiation exposure was the cause of his children's disease, although he added that "I can't find a doctor that would definitely say so." But no scientific opinion was cited in support of this worker's conjecture—nor was any cited to give credence to the suspicions of farmers near Maxey Flats.

Predictably, both NBC and nuclear industry spokesmen are now claiming a kind of moral victory. The Atomic Industrial Forum is expressing satisfaction at the fact that the NNC upheld complaints with respect to the reporting about the West Valley and Maxey Flats episodes. Lester Crystal, president of NBC News, stands by the documentary and points to the council's favorable overall judgment and to the fact that its chairman, Norman Isaacs of Columbia University's Graduate School of Journalism, dissented from the two adverse findings on the grounds that the flaws in the reporting were minor.

More Burning of Coal Offsets Gains in Air Pollution Control

The Council on Economic Priorities (CEP), a nonprofit public interest group based in New York and San Francisco, has some discouraging news for those who have been hoping that the increased use of coal called for in national energy plans can be accompanied by an improvement in air quality. Unless electric utilities do better in the future than they did during the first half of the 1970's, the gains made from installation of pollution-control equipment in their fossil-fuel generating plants will not be sufficient to offset the effects of burning more coal.

In an update of a 1972 report on the pollution emissions from the fossil-fuel plants of a representative group of major utilities, the CEP says that the level of emissions for the period 1971 to 1975 remained "substantially unchanged," the industry by and large "continues to lag behind what is technically feasible and legally required."

The new study *The Price of Power/Update* covers the performance of 15 utilities, including most of the larger ones. CEP attributes the relatively good emissions record of companies such as Pacific Gas & Electric, Southern California Edison, and Consolidated Edison of New York largely to their use of low-sulfur fuel oil and, in some cases, natural gas.

The six companies that CEP ranked lowest with respect to emissions—the Southern Company, Commonwealth Edison, American Electric Power, Northern States Power, Union Electric, and the Tennessee Valley Authority (TVA)—rely on coal as their primary fuel. TVA, the nation's largest electric utility, was ranked at the bottom with respect to rate of emissions by unit of power output. CEP attributed this to TVA's use of dirty, high-sulfur coal and "its resistance to the use of state-of-the-art pollution control equipment."

The price of retrofitting the 15 utilities' existing major fossil-fuel plants with the best air and water pollution control equipment available would run between $9 billion and $13 billion. The cost to TVA alone could amount to $2.7 billion.

In his preface to the report, Representative Richard L. Ottinger (D–N.Y.), a past chairman of the House of Representatives' Environmental Study Conference, calls for both strict enforcement of high pollution control standards and adoption of policies that will lessen the need to build more large coal-fired central station generating plants.

— Luther J. Carter