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June 23, 2003

John Kinneman
Branch Chief
Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406

RE: License application by CFC Logistics, Inc. (docket number 03036239)

Dear Mr. Kinneman:

Please accept this letter as a request on behalf of several residents of Milford Township for a hearing before the Nuclear Regulatory Commission (NRC) regarding the above application to use cobalt-60 in the irradiation of food at 4000 AM Drive, Quakertown, PA 18951 in Milford Township, Pennsylvania. See exhibit for list of requestors.

Requestors Tom Helt, Kelly Helt and Andrew Ford have standing to request a hearing because they live approximately half a mile from the proposed irradiation facility. All of the remaining requestors live less than two miles from the facility. See exhibit. Given the significant potential risks associated with nuclear materials, they and their property will be affected by an NRC decision to grant CFC Logistics, Inc. a license.

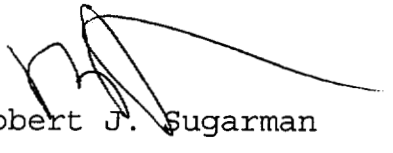
This request for a hearing is timely. Philip Stein and Judy Szela learned of the pending application on Friday, May 23, 2003 when Mr. Stein went to a local store, and the owner told him about the proposed irradiation at the CFC facility. Notice of CFC's application to the NRC for a license to use cobalt for the irradiation of food was not published in the Federal Register. Therefore, because notice was not published in the Federal Register, this request is timely because it is being filed 30 days after the requestor received actual notice of the pending application (the limitation period is tolled to the next business day if, as is the case here, the day on which the time period ends is a Sunday. 10 C.F.R. § 2.1314). 10 C.F.R. § 2.1205(d).

The remaining requestors learned of the pending application approximately one week ago, and are therefore well within the 30-day time limitation prescribed by 10 C.F.R. § 2.1205(d).

The use of cobalt to perform irradiation is a highly hazardous activity which is a threat to employees, neighbors, and the public. The proposed irradiation facility is unsafe because it is not sufficiently isolated from residents of Milford Township. Because irradiation plants are relatively small, they are often unregulated and lack adequate security, posing a serious threat to national security and the local community. See Samuel Epstein, M.D., *Food Irradiation Threatens Public Health*, Environmental News Service, Mar. 8, 2002. There is no public evidence of any precautionary measures for this facility. Further, irradiation plants pose environmental and public health dangers by generating high levels of ozone that is particularly harmful because of its close proximity to the ground. *Id.* Moreover, irradiation plants must be regularly replenished with cobalt, thereby increasing transportation hazards (nationally and locally) as frequent shipments of highly radioactive material must be made to the plant. See Samuel S. Epstein, M.D. & Wenonah Hauter, *Preventing Pathogenic Food Poisoning: Sanitation, Not Irradiation*, International Journal of Health Services, Vol. 31 No. 1, 2001. Some irradiation facilities expose workers to dangerous levels of radiation when they frequently have to open irradiation chambers, See Donald Louria, *Zapping the Food Supply*, Bulletin of the Atomic Scientists, Vol. 46 No. 5, June 1990, as shown by incidents at New Jersey irradiation plants leaving workers injured after exposure to near-fatal doses of cobalt-60, and the public sewer system contaminated after introducing cobalt-60 contaminated water into the system, residents will be affected as well. See *Dangers of Irradiation Facilities: A legacy of deaths, injuries, accidents and cover-ups*, Organic Consumers Association (first published by Public Citizen (www.citizen.org), March 14, 2001.

Requestors have not had an opportunity to voice their concerns about CFC's license application to the NRC. Evidence as to the undue chronic and accidental spill risk would be presented. We respectfully request that the requestors be granted a hearing to do so.

Sincerely,

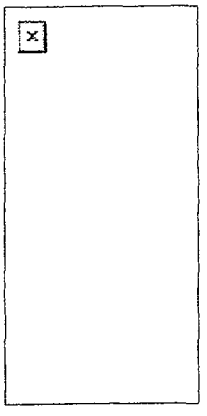


Robert J. Sugarman

cc: General Counsel, Nuclear Regulatory Commission

Bulletin of the Atomic Scientists

June 1990
Vol. 46, No. 5



Zapping the food supply

Donald B. Louria

New arguments are boiling up over an old idea--irradiating food with ionizing radiation to kill microorganisms and prolong shelf life. The idea of exposing food to gamma radiation is over 30 years old, and in 1963 the Food and Drug Administration (FDA) began to permit the irradiation of wheat. Over the years, a few more foodstuffs such as spices and tea were added to the FDA's list of candidates for irradiation. But in 1984 the FDA started to approve irradiation of a much broader list of products which now includes meat, poultry, and fresh fruits and vegetables. Simultaneously the FDA has increased the levels of radiation that may be used. The FDA's recent willingness to allow most of the food supply to be irradiated--and at high doses--has triggered an acrimonious debate.

The amount of radiation involved is substantial. The FDA has approved a 3,000,000 rad dosage for treating spices, 300,000 rad for pork, and 100,000 rad for fresh fruits and vegetables. These intensities are millions of times greater than that of an ordinary chest X-ray (which is typically about 20 millirad). The announced goal of promoters of food irradiation is to obtain general approval for the use of up to one million rad.

Irradiation does not make food radioactive, nor has alleged radioactivity been at issue in the debate. But there is concern that foods processed by irradiation may contain radiolytic products that could have toxic effects.

The source of radiation is either cobalt 60 or cesium 137. The prospect of increased transportation and handling of cobalt and cesium--dangerous substances--has caused negative publicity. Some irradiation proponents say food processors could theoretically use as-yet-undeveloped linear acceleration techniques instead. But if food irradiation becomes commonplace any time soon, cesium or cobalt

will be used.

The major objective of irradiation is to destroy microorganisms that cause food to spoil. For example, irradiating chicken should reduce the outbreaks of salmonella that are probably caused by careless or unhygienic methods in production and processing. Irradiating pork might reduce the already limited risk of trichinosis, and irradiating turkey would diminish the number of episodes of diarrhea that result from eating undercooked meat. William McGivney, an advocate of the technology, asserts that "irradiation offers a means to decontaminate, disinfect and retard the spoilage of the food supply."1 Most opponents counter that adequate cooking and hygienic preparation will accomplish the same goal.

Promoters of irradiation emphasize that the shelf life of various foods will be increased. But these proponents have not produced any projections of the actual economic, or other, benefits of longer shelf life, especially in a developed country that has an abundant food supply. It may be easier to imagine that less developed countries might benefit if the shelf life of foodstuffs could be prolonged. But advocates have made no estimates of the extent to which better preservation would reduce world hunger, or of the cost of widespread food irradiation in less developed countries.

Irradiation is expected to reduce the need to use toxic chemicals as post-harvest fumigants, but some evidence indicates that irradiated foods are more, not less, subject to infection with certain fungi.2

At dispute in the controversy over food irradiation are the quality of the FDA's safety assessment, the loss of nutritional value that irradiated foods undergo, the risk of environmental contamination posed by irradiation facilities, and the possible cancer-causing nature of irradiated foods. An additional dispute revolves around the motives of the Energy Department, which has promoted irradiation and is the potential supplier of cesium 137, a waste byproduct of nuclear reactors.

- **Safety**. The FDA judged safety based on five of 441 available toxicity studies. Of the available literature, claimed the FDA, only these five animal studies were "properly conducted, fully adequate by 1980 toxicological standards and able to stand alone in support of safety."3
  But when these studies were reviewed at the Department of Preventive Medicine and Community Health of the New Jersey Medical School, two were found to be methodologically flawed, either by poor statistical analyses or because negative data were disregarded.4 One of the two also suggested that irradiated food could have adverse effects on older animals. In a third FDA-cited study, animals fed a diet of irradiated food experienced weight loss and miscarriage, almost certainly due to irradiation-induced vitamin E dietary deficiency.5 This

study, which used foods that had been subjected to large doses of radiation, indicated that irradiated food suffered nutritional loss.

These three studies do not document the safety of food irradiation, and why the FDA relied on them is mystifying. The two other studies cited by FDA appear to be sound, but these studies investigated the effects of diets consisting of foods irradiated at doses below the current FDA-approved general level of 100,000 rad. Therefore they cannot be used to justify irradiation of foods at the levels currently approved by the FDA. Now, as the FDA considers adopting 300,000 rad as the general dosage level, the agency has not requested new studies, but is relying on some of the older studies it failed to include as methodologically sound.

Ethical and methodological barriers make it nearly impossible to study the effects of a diet of irradiated foods in human subjects. One small, controversial study carried out in India in the mid-1970s looked at the effects of feeding irradiated and unirradiated foods to 15 children with severe protein and total-calorie malnutrition.6 Five children were fed unirradiated wheat, five freshly irradiated wheat, and five ate irradiated wheat that had been stored for a minimum of three months. Children who had eaten freshly irradiated wheat had unusually high rates of chromosomal abnormalities in their blood (especially polyploidy). No such changes occurred in the group that ate irradiated wheat that had been stored. Although some animal studies have supported the results of this study, it has provoked an acerbic debate. Clearly, the study has major flaws: the size of the sample is too small, subjects were not properly randomized, and statistical methods are unclear.

A more recent study of 70 subjects was conducted in China.7 In contrast to the severely malnourished subjects in the Indian study, all the Chinese subjects were healthy young men and women. The experimental group ate irradiated foods that had been stored for an extended period of time. (Also, the group's diet was essentially wheat-free.) Both groups--those receiving irradiated foods and the control group--showed some increases in chromosomal abnormalities during the test period. Those given irradiated foods appeared to have a slightly increased rate of abnormalities.While neither of these studies are conclusive, they should not be dismissed. If the malnourished are particularly vulnerable to the dangers of an irradiated diet, hundreds of millions of malnourished people could be at risk. More studies on chromosomal abnormalities are necessary, but there are ethical as well as methodological problems in designing and conducting them.

- **Nutrition**. There is impressive evidence that irradiated foods lose vitamin content, particularly vitamins A, C, E, and some of the B complex.8 The amount of vitamin loss varies from one type of food to another, but in general there is a direct relationship between the amount of irradiation and the extent

of nutritional value lost. Data on foods irradiated with 100,000 rad cannot be relied on to predict vitamin losses in foods irradiated with 300,000 or 1,000,000 rad. Some studies indicate that cooking irradiated foods causes an additional, inordinate loss of nutrients.9 In addition, little is known about the nutritional effects of freezing and thawing food that has been irradiated.

Those who favor irradiation do not deny the loss of vitamin content, but often assert that these nutritional losses will not harm people who eat a generally nutritious and balanced diet. Others suggest that irradiated foods should be fortified with vitamins, or that the public should be urged to take vitamin supplements. In less developed countries, reducing the food supply's nutritional value would seem to raise a major ethical question. Asking the world's 800 million malnourished and 2 billion undernourished to make a possible trade-off between longer shelf life and less nutrition seems harsh, particularly before more complete information on the nutritional value of irradiated foods is available.

- **Environmental issues**. Opponents of food irradiation have raised four interrelated environmental issues: the dangers of transporting radioactive isotopes to hundreds of treatment facilities, the environmental practices of those facilities, the danger of worker exposure in environments where irradiation chambers are frequently opened to allow foodstuffs to pass in and out rapidly, and potential security problems at irradiation plants.

  If all the poultry in the United States were to be irradiated, hundreds of new irradiation plants would be needed. There are about forty plants of a size suitable for food irradiation already in operation. Most of these plants are used primarily to irradiate disposable medical equipment. In New Jersey, which has the highest concentration of these facilities, plant safety records are not encouraging. Virtually every New Jersey plant has a record of environmental contamination, worker overexposure, and regulatory failings.

  A serious accident occurred at a Decatur, Georgia, cesium irradiator in June 1988. That facility was shut down after a cesium leak exposed 10 workers to radiation and contaminated medical supplies and consumer products.10 Clean-up costs at the Decatur plant have climbed to more than $15 million, and no conclusions have been reached about the cause of the accident.

  Unlike major nuclear facilities, irradiation plants will be relatively small and are unlikely to be well protected. Opponents fear these plants will be particularly vulnerable to sabotage or terrorist attack and express similar concerns about the safety and security of large numbers of shipments of highly radioactive materials. If food irradiation becomes commonplace, hundreds of irradiation plants will need to have their inventories of cesium 137 or cobalt 60 replenished on a

regular basis.

- **The cancer threat**. The irradiation process produces unique radiolytic products whose chemical and toxic properties have not been characterized. In-vitro tests in the laboratory suggest that some of these products may cause mutations, and these tests have led critics of irradiation to contend that some irradiated foods may prove carcinogenic. But there are no substantial data from epidemiological studies on either animals or humans to support that contention. Unless the chemical properties of all the radiolytic products are identified, and animals studies using amplified doses are conducted, there is no way to prove that a cancer risk exists and, if so, whether it would fall within acceptable limits. Adequate evidence for prudent decisions on the cancer risk of food irradiation will not be available for some time.
- **The Energy Department connection**. The Energy Department, through its Byproducts Utilization Program, tries to develop commercial uses for radioactive waste products. Creating a commercial demand for cesium, which is a waste product of both weapons production and civilian nuclear power, has been one of its expressed goals since the early 1980s. Energy Department memoranda indicate that the department's plan included pricing cesium so low that it would drive Canadian cobalt out of the market.11

Some critics charge that the Energy Department has been even more devious. They claim that the department was less interested in disposing of cesium than it was in overturning the ban on reprocessing civilian nuclear fuel. These critics claim that the department calculated that widespread food irradiation would eventually deplete the available supplies of cesium 137. At that point, the irradiation industry would begin to lobby for the reprocessing of spent fuel, and the department could use the industry to overcome the political and economic obstacles to reprocessing nuclear fuel. Once reprocessing was permitted, the Energy Department could separate the plutonium in spent fuel, which it could then use in weapons.12

There is no reason to adopt every new technology that is suggested. Ideally, food irradiation should be made to compete on a commercial basis with other technologies. If it had no disadvantages or dangers, the marketplace alone would decide its fate. Most food processors now think that irradiation is costly and less effective than other methods of preservation, and consumers are resistant to the idea of radiation-treated foods. But the adoption of food irradiation technologies raises questions of public health. Many local authorities have opted for alternative technologies. In Florida, the Citrus Commission/Department of Agriculture has chosen to use two other processes--fly-free zones and cold treatment. Hawaiian officials rejected federal funds offered to build an irradiation facility for processing papaya; instead, the papaya processor will use non-

chemical treatments such as dry and steam heat or double hot water dips. Some biotechnological researchers are confident that recombinant DNA technologies will eventually create pest-resistant fruits and vegetables with extraordinarily long shelf lives.

If food irradiation is adopted prematurely, research on its health effects will be hampered. Widespread use of the technology will make it impossible to detect any but the most obvious of adverse effects, because it will be impossible to define a control population for purposes of study. This problem will be further complicated if irradiation levels are increased to 1 million rad.

Labeling is currently required to notify the consumer when whole foods have been irradiated. The label includes written notice and the international irradiation symbol, the "radura"--a stylized flower which has caused some confusion because of its close resemblance to the Environmental Protection Agency's logo. Prepared or packaged foods, foods prepared for restaurant or school cafeteria use, and foods which merely contain some irradiated ingredients are exempt from labeling.

While the FDA has approved wholesale food irradiation, other regulators are less eager. More than a dozen state legislatures, concerned about the environmental and health risks of irradiated food, have restricted its sale and distribution. Maine has banned both irradiation facilities and all irradiated food except spices. New York and New Jersey recently enacted two-year moratoriums on the sale or distribution of irradiated foods, and New Jersey has prohibited the "manufacture" of such food items. Other states contemplating restrictive legislation include Massachusetts, Pennsylvania, Minnesota, Oregon, and Alaska. Bills have been introduced in Congress to place a two-year moratorium on irradiated foods while the National Academy of Sciences reviews the health, environment, and worker safety issues. Great Britain has banned irradiated food, although legislation has been introduced into Parliament to overturn the ban. West Germany, Australia, Denmark, Sweden, and New Zealand have all banned or severely limited the implementation of food irradiation.

Donald B. Louria is chairman of the preventive medicine department at the New Jersey Medical School in Newark, New Jersey.

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March 14, 2001

THE DANGERS OF IRRADIATION FACILITIES
A LEGACY OF DEATHS, INJURIES, ACCIDENTS AND COVER-UPS

Thanks to Public Citizen for this summary

Supporters of food irradiation often say that irradiation facilities are safe. They say accidents rarely happen. They say injuries and deaths are infrequent. They say the public is in no danger.

The historical record says otherwise. Since the 1960s, dozens of accidents-- as well as numerous acts of wrongdoing-- have been reported at irradiation facilities throughout the United States and the world. Radioactive water has been flushed down toilets into the public sewer system. Radioactive waste has been thrown into the garbage. Radiation has leaked. Facilities have caught fire. Equipment has malfunctioned. Workers have lost fingers, hands, legs and, in several cases, their lives. Company executives have been charged with cover-ups and, in one case, sentenced to federal prison.

The debate over food irradiation would not be complete without an understanding of the risks associated with the technology itself. Here are some examples of what can go wrong.

ACCIDENTS AT GAMMA-RAY FACILITIES

Decatur, Georgia

In June 1988, a capsule of radioactive cesium-137-- a waste product from nuclear weapons production-- sprung a leak at a Radiation Sterilizers plant near Atlanta. Though the leak was contained to the site, two of the three exposed workers spread radioactivity to their cars and homes. And an estimated 70,000 milk cartons, contact lens solution boxes and other containers were shipped out after they were splashed with radioactive water. Only about 900 of the contaminated containers were recalled. The ensuing taxpayer-funded cleanup cost more than $30 million, after which a government report concluded that "the public health and safety could have been compromised."

Dover, New Jersey

In June 1986, two senior executives of Palo Alto, CA-based International Neutronics were indicted on federal charges of conspiracy, mail fraud and wire fraud in connection with an October 1982 spill of 600 gallons of water contaminated by radioactive cobalt-60. After a pump malfunctioned, workers were instructed to pour the radioactive water down a shower drain that emptied into the public sewer system. Workers were also ordered to wear their radiation-detection "badges" in such a way to falsify radiation levels. In the words of a federal prosecutor, company executives "bamboozled" Nuclear Regulatory Commission (NRC) inspectors by delaying an inspection of the facility, where food, gems, chemicals and medical supplies were irradiated. A $2 million cleanup included the cost to dispose of radioactive material at a nuclear waste dump in South Carolina. Company vice president Eugene O'Sullivan, a former member of the U.S. Atomic Energy Commission, was convicted of conspiracy and fraud in October 1986.

Honolulu, Hawaii

In 1979, decontamination began at the state-run Hawaiian Developmental Irradiator at Fort Armstrong where, years earlier, radioactive water leaked onto the roof and the front lawn. Nearly 100,000 pounds of steel, 250 cubic feet of concrete and 1,100 cubic feet of soil were removed and taken to the nuclear waste dump in Hanford, Wash. The plant was shut down in 1980 and the remaining cobalt-60 was shipped to the University of Hawaii. Hawaii taxpayers paid most of the $500,000 cleanup.

Parsippany, New Jersey

In June 1974, William McKimm, the radiation director at an Isomedix cobalt-60 facility, was exposed to a near-fatal dose of 400 rems while irradiating medical supplies. McKimm was critically injured and hospitalized for a month. Two years later, a fire near the cobalt storage pool released chemicals into the pool that caused the cobalt rods to corrode and leak. Radioactive water was then flushed down the toilet into the public sewer system. Eventually, concrete around the cobalt-60 pool, as well as the toilet and bathroom plumbing, was found to be radioactive and taken to a nuclear waste dump. The amount of radiation released into the public sewer system was never determined.

Rockaway, New Jersey

In 1977, Michael Pierson was exposed to a near-fatal dose of 150-300 rems at a Radiation Technology facility when a system designed to protect workers from radioactive cobalt-60 failed. In 1986, the NRC cited company executives for intentionally disabling the system. In 1988-- after more than 30 NRC violations, including one for throwing out radioactive garbage with the trash-- company president Martin Welt and nuclear engineer William Jouris were charged in

federal court with 11 counts of conspiracy to defraud the NRC, making false statements and violating the Atomic Energy Act. Welt, who threatened to fire workers who didn't lie to NRC investigators, was also charged with obstruction of justice. Both men were convicted. Jouris was sentenced to probation; Welt was sentenced to two years in prison, placed on three years probation and fined $50,000.

ACCIDENTS AT ELECTRON-BEAM FACILITIES

In 1991, a Maryland worker ignored safety warnings and received a 5,000-rad dose from a 3 million electron-volt linear accelerator. He lost four fingers.

In 1992, a mishap at a 15 million electron-volt linear accelerator in Hanoi cost the facility's research director a hand and several fingers.

FATAL ACCIDENTS IN OTHER COUNTRIES

In February 1989, three El Salvadoran workers suffered serious burns and radiation sickness when they were exposed to cobalt-60. None had received formal training to operate the equipment, which was made by Atomic Energy of Canada Limited. Eventually, one worker died and the others had their legs amputated.

In 1975, an Italian worker was exposed to cobalt-60 when he bypassed all safety controls, climbed onto a conveyor belt and entered the irradiation chamber. He died 12 days later.

In 1982, a Norwegian worker received a 1,000-rem cobalt-60 dose while trying fix a jammed conveyor belt. He died 13 days later.

In 1990, an Israeli worker was exposed to cobalt-60 after an alarm failed. He died 36 days later.

In 1991, a worker in Belarus was exposed to cobalt-60 after several safety features were circumvented. He died 113 days later.

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To learn more about food irradiation, visit http://www.citizen.org/cmep.

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PREVENTING PATHOGENIC FOOD POISONING: SANITATION, NOT IRRADIATION*

by Samuel S. Epstein, MD, and Wenonah Hauter

Bacterial food poisoning can be readily prevented by long overdue basic sanitary measures rather than by ultra hazardous irradiation technologies.

The food and nuclear industries, with strong government support, have capitalized on recent outbreaks of pathogenic *E. Coli* 0157 meat poisoning to mobilize public acceptance of large-scale food irradiation. Already, the Food and Drug Administration (FDA) is allowing the use of high-level radiation to "treat" beef, pork, poultry, eggs, vegetables, fruit, flour, and spices, while the U.S. Department of agriculture (USDA) proposes the imminent irradiation of imported fruit and vegetables.

. . . the proposed "electronic pasteurization" label is a euphemistic absurdity, especially since the FDA's approved meat irradiation dosage of 450,000 rads is approximately 150 million times greater than that of a chest X-ray, besides circumventing consumers' fundamental right to know.

Caving in to powerful corporate industry interests, both House and Senate Appropriations Committees have recently proposed to sanitize the FDA's weak labeling requirements for irradiated food by eliminating the word "irradiated" in favor of "electronic pasteurization"; this term was proposed by the San Diego-based Titan corporation, an erstwhile major defense contractor using highly costly linear accelerator "E-beam" technology, originally designed for President Reagan's "Star Wars" program, to shoot food with a stream of electrons traveling at the speed of light. However, the proposed "electronic pasteurization" label is a euphemistic absurdity, especially since the FDA's approved meat irradiation dosage of 450,000 rads is approximately 150 million times greater than that of a chest X-ray, besides circumventing consumers' fundamental right to know.

Furthermore, the new labeling initiative is reckless. Irradiated meat is a very different product from cooked meat. Whether the meat is irradiated by linear accelerators or by pelletized radioactive isotopes, the resulting ionizing radiation produces highly reactive free radicals and peroxides from unsaturated fats. U.S. Army analyses in 1977 revealed major differences between the volatile chemicals formed during irradiation and during the cooking of meat. Levels of the carcinogen benzene in irradiated beef were found to be some tenfold higher than in cooked beef. Additionally, high concentrations of six poorly characterized "unique radiolytic chemical products," admittedly "implicated as carcinogens or carcinogenic under certain conditions," were also identified.

Levels of the carcinogen benzene in irradiated beef were found to be some tenfold higher than in cooked beef.

Based on these striking changes in the chemistry of irradiated meat, the FDA's 1980 Irradiated Food Committee explicitly warned that safety testing should be based on concentrated extracts of irradiated foods, rather than on whole foods, to maximize the concentration of radiolytic products. This would allow development of sufficient sensitivity for routine safety testing. In 1984, Epstein and Gofman more specifically urged that "stable radiolytic products could be extracted from irradiated foods by various solvents which could then be concentrated and subsequently tested. Until such fundamental studies are undertaken, there is little scientific basis for accepting industry's assurances of safety." In an accompanying comment, the FDA was quoted as admitting that "it is nearly impossible to detect [and test radiolytic products] with current techniques" on the basis of which the agency's claims of safety persist.

While refusing to require standard toxicological and carcinogenicity testing of concentrated extracts of radiolytic products from irradiated meat and other foods, the FDA instead has relied on some five studies selected from 441 published prior to the early 1980s, on which its claims of safety are still based. However, the chairperson of the FDA's Irradiated Food Task Committee, which reviewed these studies, insisted that none were adequate by 1982 standards, and even less so by 1990s standards. Furthermore, a detailed analysis of these studies revealed that all were grossly flawed and non-exculpatory.

(3)

Food irradiation results in major micronutrient losses, particularly in vitamins A, C, and E and the B complex. As admitted by the USDA Agricultural Research Service, these losses are synergistically increased by cooking, resulting in "empty calorie" food; this is a concern of major importance for malnourished populations

These results are hardly surprising given that a wide range of independent studies before 1986 clearly identified mutagenic and carcinogenic radiolytic products in irradiated food and confirmed evidence of genetic toxicity in tests on irradiated food. Studies in the 1970s by India's National Institute of Nutrition reported that feeding freshly irradiated wheat to monkeys, rats, and mice and to a small group of malnourished children induced gross chromosomal abnormalities in blood and bone marrow cells, and mutational damage in the rodents.

Food irradiation results in major micronutrient losses, particularly in vitamins A, C, and E and the B complex. As admitted by the USDA Agricultural Research Service, these losses are synergistically increased by cooking, resulting in "empty calorie" food; this is a concern of major importance for malnourished populations. Radiation has also been used to clean up food unfit for human consumption, such as spoiled fish, by killing odorous contaminating bacteria.

. . . the Department of Energy continues its decades-long aggressive promotion of food irradiation as a way of reducing disposal costs of spent military and civilian nuclear fuel by providing a commercial market for cesium nuclear wastes.

While the USDA is strongly promoting meat and poultry irradiation, it has been moving to deregulate and privatize the industry by promoting a self-policing Hazard Analysis and Critical Control Point control program; in late 2000, the agency will start a rule-making process to privatize meat inspection. Moreover, the Department of Energy continues its decades-long aggressive promotion of food irradiation as a way of reducing disposal costs of spent military and civilian nuclear fuel by providing a commercial market for cesium nuclear wastes.

Irradiation facilities using pelletized isotopes pose risks of nuclear accidents to communities nationwide from the hundreds of facilities envisaged for the potentially enormous irradiation market; in contrast to nuclear power stations, these facilities are small, minimally regulated, and unlikely to be secure and they require regular replenishment of cobalt (Co-60) or cesium (Cs-137) isotopes, entailing nationwide transportation hazards. Furthermore, linear accelerators, besides plants using radioactive isotopes, pose grave hazards to workers and are subject to virtually no regulation.

. . . the Nuclear Regulatory Commission files are bulging with unreported documents on radioactive spills, worker overexposure, and off-site radiation leakage. Strangely, the Environmental Protection Agency has still failed to require an Environmental Impact Statement before the siting of food irradiation facilities.

The track record of the irradiation industry is, at best, unimpressive. Robert Alvarez, former senior policy advisor in the Department of Energy, recently warned that the Nuclear Regulatory Commission files are bulging with unreported documents on radioactive spills, worker overexposure, and off-site radiation leakage. Strangely, the Environmental Protection Agency has still failed to require an Environmental Impact Statement before the siting of food irradiation facilities.

The focus of the irradiation and agribusiness industries is directed to the highly lucrative cleanup of contaminated food rather than to preventing contamination at its source. However, *E. coli* 0157 food poisoning can be largely prevented by long overdue improved sanitation. Feedlot pen sanitation, including reduced overcrowding, drinking water disinfection, and fly control, would drastically lower cattle infection rates. Moreover, *E. coli* 0157 infection rates could be virtually eliminated by feeding hay, rather than the standard unhealthy starchy grain, for seven days prior to slaughter. Sanitation would also prevent water contamination from feedlot runoff, incriminated in the recent outbreak of *E coli* 0157 poisoning in Walkerton, Ontario; runoff will remain a continuing threat even if all meat is irradiated.

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Pre-slaughter, post-knocking, and post-evisceration sanitation at meat packing plants is highly effective for reducing carcass contamination rates. Testing pooled carcasses for *E coli* 0157 and *Salmonella* contamination is economical, practical, and rapid. The expense of producing sanitary meat would be trivial compared with the high cost of irradiation, including possible nuclear accidents, which would be passed on to consumers. Additional high costs are likely to result from an expected international ban on the imports of irradiated U.S. food, and also from losses of tourist revenues.

. . . food poisoning can be largely prevented by long overdue improved sanitation. . . . expense of producing sanitary meat would be trivial compared with the high cost of irradiation . . .

We charge that the support of the "electronic pasteurization" label by the food and irradiation industries, governmental agencies, and Congress is a camouflaged denial of citizen's fundamental right to know. Rather than sanitizing the label in response to special interests, Congress should focus on sanitation, not irradiation of the nation's food supply.

*Epstein, Samuel S. and Wenonah Hauter, "Preventing Pathogenic Food Poisoning: Sanitation, Not Irradiation," *International Journal of Health Services*, 31(1):187-92, 2001.

This article contains 18 references and 44 endorsements. To obtain these references and endorsements, contact NOHA, P. O. Box 380, Winnetka, IL 60093.

Article from *NOHA NEWS*, Vol XXVI, No. 2, Spring 2001, pages 2-3.

(5)

FOOD IRRADIATION THREATENS PUBLIC HEALTH

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From: http://www.ens.com

By Samuel Epstein, M.D., March 8, 2002

Chicago, Illinois - Iowa Senator Tom Harkin's last minute provisions in the Senate farm bill allowing irradiated beef to be labelled "pasteurized," instead of the Food and Drug Administration's small print "treated by irradiation" label, is a surprising denial of consumers' fundamental right-to-know.

Consumers are wary of irradiated food, and with good reason even if they don't understand the dangers involved. Irradiated meat is a very different product from cooked meat. Irrespective of whether radiated by radioactive cobalt pellets or rods, X-ray machines or electron beams, the current permissible radiation dosage is about 200 million times greater than a chest X-ray.

As well documented since the 1960s, these massive doses of ionizing radiation produce profound chemical changes in meat. These include elevated levels of the carcinogenic chemical benzene, and also the production of unique new chemicals, known as radiolytic products, some of which have been implicated as carcinogenic.

Additionally, irradiated food has been shown to induce genetic damage in a wide range of studies, including tests on malnourished children by India's National Institute of Nutrition.

Of particular concern in this regard, are a group of readily detectable unique chemicals known as cyclobutanones which have recently been shown to cause chromosomal damage in intestinal cells of rats and humans.

The Food and Drug Administration (FDA) and the U.S. Department of Agriculture (USDA) have ignored the strong evidence on the cancer and genetic risks of irradiated food. Instead, they have relied on a group of five studies, selected from a total of over 400 studies prior to 1980, on which their current claims of safety are based.

The FDA has persisted in these claims even though its own expert Irradiated Food Committee warned that the tests are grossly flawed and inadequate.

Furthermore, as admitted by USDA's Agricultural Research Service, irradiation results in major losses of vitamins, particularly A, C, E and the B complex. These losses are substantially increased by cooking, resulting in empty calorie food, a concern of major importance for the malnourished. Radiation has also been used to clean up food unfit for human consumption, such as spoiled fish, by killing odorous contaminating bacteria.

While the USDA is actively supporting meat and poultry radiation, it has been moving to deregulate and privatize the industry by promoting self-policing programs. Irradiation is also aggressively promoted by the Department of Energy's Byproducts Utilization Program to reduce disposal costs of spent military and civilian nuclear fuel by providing a commercial market for nuclear wastes.

Food irradiation plants pose grave dangers to national security. They are relatively small, unregulated, and unlikely to be secure. As such,

they are highly vulnerable to sabotage.

Of particular current concern are terrorist attacks to steal radioactive cobalt pellets. These could be mixed with conventional explosives to produce so-called "dirty bombs," whose effects could be devastating.

These plants pose additional dangers to local communities by generating high levels of ozone, a very toxic atmospheric pollutant when it is close to ground level instead of high in the stratosphere where it protects the Earth from ultraviolet radiation.

Not surprisingly, the focus of the radiation and agribusiness industries has been directed to the lucrative clean up of contaminated food, rather than preventing contamination at its source. However, bacterial food poisoning, particularly with E.coli O157, which can be dangerous and lethal to young children, can be largely prevented by long overdue improved sanitation, apart from thorough cooking of meat.

Sanitation in cattle feedlots, including reducing overcrowding, drinking water disinfection and fly control, would drastically reduce cattle infection rates.

Moreover, O157 infection rates could be virtually eliminated by feeding hay seven days prior to slaughter, which the industry is unwilling to do because of higher costs. Sanitation would also prevent drinking water contamination from feedlot run off, incriminated in recent outbreaks of O157 poisoning; this would remain a continuing threat even if all meat were irradiated.

Pre-slaughter and post-evisceration sanitation at meat packing plants are also highly effective for reducing carcass contamination rates. Practical techniques are available for rapid individual or pooled carcasses for fecal and bacterial contamination.

The expense of producing sanitary meat would be trivial compared to the high costs of irradiation, which would be passed on to consumers, apart from assuring its wholesomeness and safety, besides preventing nuclear accidents and terrorism.

Rather than sanitizing the label in response to special interests, Congress should focus on sanitation, not irradiation of the nation's food supply.

For further information on food irradiation, see the recently published article "Preventing Pathogenic Food Poisoning: Sanitation, Not Irradiation," endorsed by over 20 leading international experts, "International Journal of Health Services," volume 31(1):187-192, 2001.

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Top

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