ALASKA LEGISLATURE COMMITTEE FILES, 1989-1990 8672
6426 SENATE LABOR & COMMERCE 830

AKPIRG
ALASKA PUBLIC INTEREST RESEARCH GROUP
Post Office Box 10-1093 / Anchorage, Alaska 99510 / (907) 278-3661

Sen. Dick Eliason, Chairman
Senate Labor & Commerce Committee
P.O. Box V
Juneau, AK 99811

17 April 1989

Dear Sen. Eliason,

On behalf of the hundreds of people who have made their concerns regarding irradiated food products known over the past several months and the many people who have supported the efforts of AKPIRG and other organizations to halt the sale of irradiated foods in Alaska, I want to thank you for your committee vote in support of HB 25.

With passage from the Labor & Commerce committee, this bill is now ready to move through Rules and to a Floor vote in the near future. We're pleased that Alaskans can look to you for continued support for this simple and important legislation.

Sincerely,

Jeffrey R. Bohman
Executive Director

cc: Rep. Randy Phillips

Alaska State Legislature

HOUSE OF REPRESENTATIVES

Official Business

REPRESENTATIVE RANDY PHILLIPS
HOUSE DISTRICT 15
(907) 465-4949

P.O. Box V
State Capitol
Juneau, Alaska 99811

Memorandum

TO: Senate Labor & Commerce Com

FROM: Representative Randy Phillips

DATE: April 4, 1989

RE: CS HB 25 (Rules)
An Act prohibiting under the Alaska Food, Drug, and Cosmetic Act the knowing sale of irradiated food, authorizing embargo and detention remedies in the case of a violation of the prohibition against the sale of irradiated food; and making the commissioner of environmental conservation responsible for enforcing the prohibition

Committee Substitute for House Bill 25 (Rules) would prohibit the sale of irradiated foods within the State of Alaska.

The sectional analyses attached speak to House Bill 388 from the 1988 session or to House Bill 25 from this session. Legislative Counsel Bannister has advised me that these memoranda apply to the bill I have requested you to adopt. This bill excludes irradiated spices from being considered as irradiated foods. Additionally advice from Ms. Bannister with regard to House Bill 388 indicated that while this bill does not prohibit the manufacturing of irradiated food, A.S. 17.20.340 indicates that such manufacturing would also be prohibited (See Attachment 2). There were also some questions last year about the state's right to limit "interstate commerce" and I have attached another memorandum from Ms. Bannister concerning this question (see Attachment 3). The House Judiciary Committee last year also asked a question about the affect of the federal supremacy clause and a memorandum from Legal Services on that is attached as Attachment 3A.

During the 1988 legislative session, the House passed House Bill 388 dealing with irradiated foods but the bill did not pass the Senate. The provisions contained in House Bill 25 would be added to the Alaska Food, Drug, and Cosmetic Act and this would mean that certain enforcement provisions included in that act would follow with the adoption of the language in this bill. Criminal penalties would be those set out in A.S. 17.20.310 (see Attachment 4) and injunctive relief would be as provided in A.S. 17.20.280 (see Attachment 5). The

proposed committee substitute bill does include provisions for embargo and detention of these items.

While the Food and Drug Administration was requested to participate in discussion on this bill during consideration last year, it declined for the reasons outlined in Attachment 6.

To the best of my knowledge at this date, only one state, Maine, has adopted a ban on the sale of irradiated foods. In talking with the Maine Department of Agriculture, Rural Resources, in Augusta, Maine, in November of this year, I was advised that enforcement of Maine's ban on irradiated foods has not been a problem. The Department has not received any complaints from consumers nor have food suppliers complained to the Department regarding any specific problem with the bill.

Other states have considered legislation concerning a food irradiation ban. Vermont has enacted strict labeling requirements for any irradiated food. Legislation has also been considered on the federal level. It is my understanding that Congressman Bosco and Senator Mitchell will be reintroducing before the United States Congress legislation similar to that proposed by them during the last congressional session.

Food irradiation is being considered as a possible food preservation method. In Alaska, one of the main foods areas being considered is seafood. The actual process involves the use of cobalt-60 (an isotope that must be manufactured in nuclear reactors from nonradioactive cobalt-59), cesium-137 (a water soluble byproduct of both nuclear weapons productions and nuclear power generation) or electron beam machine. Attachment 7 describes the process and Attachment 8 gives a brief history of food irradiation.

In 1958, Congress classified food irradiation as a food additive. This meant that before the process could be used, it had to be approved by the FDA under the Federal Food, Drug, and Cosmetic Act. While the FDA has approved food irradiation for certain different uses [control of insects in wheat (1963), inhibit sprouts in potatoes (1964), control of trichinosis in pork (1985), slow growth and ripening and control pests in produce and to kill insects and microorganisms in herbs and spices (1986)] the only use in the United States at the present time is in some spices and herbs. I have attached a list of spices and herbs that are being irradiated at the present time (see Attachment 9).

Attachment 10 describes some problems the irradiation industry has experienced and Attachment 11 lists (as of January 1987) the location of irradiator facilities in the United States.

The Institute of Northern Engineering of the University of Alaska at Fairbanks ("Institute") has published an optional analysis study that supports the building of demonstration facilities for food irradiation in Alaska. The Institute's report recommends use of an electron beam machine as the source for the irradiation process. While this machine may not have some of the problems brought about by use of cobalt-60 or

cesium-137, the process remains the same and the effect on the foods being irradiated remains the same. While the Institute and others indicate the food irradiation process does not adversely impact food, testimony before House committees last year indicated many scientists and health care professionals and consumers maintain that we do not have enough information about the changes in food made by the process to adequately insure the health safety of Alaskans.

The greatest concerns I have with the food irradiation process are as follows:

1. Safety of the process and effect on humans ingesting irradiated foods.

2. Questions about the wholesomeness of irradiated foods.

3. Risks to the environment for the irradiator plants. There is danger both to the workers in an irradiation plant as well as residents of the surrounding area. I have attached a list of incidents that have occurred at some of the forty irradiation plants that currently operate within the United States (see Attachment 10). Attachment 11 shows the location of these facilities.

4. Possible creation during the process of mutant and/or radiation resistant bacteria and the effect of the elimination of nonresistant bacteria making it easier for the mutant bacteria to survive.

5. Possible creation during the process of potent carcinogens called aflatoxins.

6. Possible elimination of the organisms that produce signals and odors that alert people to food spoilage while the bacteria that causes food poisoning may be more resistant to radiation and, therefore, still present.

7. Radioactive food may occur if the process is not handled properly.

8. Transportation of radioactive materials. If Alaska were to have such a facility as suggested by the Institute's report, radioactive materials would have to be brought in from somewhere. Even with the use of the electron beam machine, it is feared by many that eventually such a plant would have to turn to cobalt-60 or cesium-137 and these items would have to be transported in from out of Alaska.

9. Safety questions exist concerning proper storage of radioactive material.

10. Economic impact of irradiating Alaskan seafood. As stated in the Institute's report, Japan is a substantial trading partner with Alaska. Japan currently does not allow the importation of irradiated foods. From what I have read, Japanese consumers are strongly opposed

to this process and it is unlikely that Japan will drop its ban in the near future.

You might also be interested to know that at present irradiated foods not approved by the FDA do get on our grocery shelves. Attached is some pertinent information regarding some Rice-A-Roni/Noodle-Roni that contained illegal irradiated ingredients. (See Attachment 12.)

Attachment 13 is a 1987 paper on food irradiation. This paper was prepared by Food and Water, Inc.

Attachment 14 is a copy of an article by Dr. Richard Piccioni (who visited Alaska last winter and gave lectures on food irradiation in Fairbanks and Anchorage) entitled "Food Irradiation: Contaminating our Food".

Attachment 15 is a copy of a press release from Governor Steve Cowper's Office, dated February 7, 1989, and entitled "Cowper Says State to Decline Food Irradiation Facility."

Attachment 16 is a copy of the 1989 resolution from United Fishermen of Alaska concerning that organization's position on the food irradiation process.

Attachment 17 is a copy of my January 17, 1989, memorandum to the House Health, Education and Social Services Committee regarding the federal labelling requirements for irradiated foods.

For your further information, I have also attached a list of articles that I have available on this subject (Attachment 18).

I would appreciate your support of this legislation and would request that the House Rules Committee adopt the proposed committee substitute referenced above.

Attachments

INDEX TO ATTACHMENTS - HOUSE BILL 25 - Irradiated Foods

Attachment	Description
1	Memorandum explaining changes in proposed Rules Committee Substitute. Sectional Analysis of proposed substitute
2	Scope of Irradiated Food Bill (from Legislative Counsel Bannister)
3	HB 388 and the Commerce Clause (from Legislative Counsel Bannister)
3A	Federal Preemption and CSHB 388 (HESS) (from Legislative Counsel Bannister)
4	A.S. 17.20.310 (Penalties)
5	A.S. 17.20.280 (Injunction Proceedings)
6	Food and Drug Administration Testimony Advice
7	"Irradiating Food Growing Preservation Method" (American Medical News, January 24/31 1986)
8	"History of Food Irradiation" (Atomic Industrial Forum, Inc., "Backgound Info" April 1987)
9	"FDA's List of Foods Authorized for Irradiation" (NCSFI Newsletter)
10	"A Short History of Trouble/Irradiation Hall of Shame" (Food Irradiation Response Newsletter, August/September 1986)
11	"List of the 40 Irradiation Facilities in the U.S." (NCSFI Information Manual)
12	Information regarding the use of illegal irradiated ingredients
13	"Food Irradiation: A Summary" (Food and Water, Inc. September 15, 1987)
14	"Food Irradiation: Contaminating our Food" By

Attachment	Description
	Richard Piccioni (The Ecologist, Volume 18, No. 2, 1988)
15	"Cowper Says State to Decline Food Irradiation Facility" (Press Release, Feb. 7, 1989)
16	United Fishermen of Alaska, Resolution 89-5
17	Labelling requirements memorandum
18	List of Articles in Rep. Phillips' Office

STATE OF ALASKA
THE LEGISLATURE
LEGISLATIVE AFFAIRS AGENCY

POUCH V STATE CAPITOL
JUNEAU ALASKA 99811
907 465 3800

MEMORANDUM February 9, 1989

SUBJECT: CSHB 25 (Finance)
(Work Order No. 6-0222H)

TO: Representative Ron Larson and
Representative Lyman Hoffman
Co-chairs, House Finance Committee

FROM: Theresa L. Bannister TB
Legislative Counsel

This memo accompanies the above-referenced bill. As you are aware, the bill prohibits, in addition to the knowing sale, the "causing of" the knowing sale of irradiated food. Violations of these provisions are subject to criminal penalties under AS 17.20.310. Please be aware that the crime of "causing" a knowing sale may be too vague to withstand judicial scrutiny. The vagueness could be corrected by stating that the person must "knowingly" cause the knowing sale. This correction would require some adjustment of the bill, which I would be happy to prepare for you. Or you may wish to pass this concern along to the next committee of referral.

If I may be of further assistance, please advise.

TLB:lmb
L7/008

Enclosure

STATE OF ALASKA
STEVE COWPER, GOVERNOR
DEPT. OF ENVIRONMENTAL CONSERVATION
(907) 465-2600
OFFICE OF THE COMMISSIONER
P.O. BOX 0, JUNEAU, AK 99811-1800

February 27, 1989

The Honorable Randy Phillips
Alaska State House of Representatives
P.O. Box V
Juneau, Alaska 99811

Dear Representative Phillips:

The Department recently submitted a position paper on HB 25, an Act relating to Irradiated Foods. As part of this position paper, we suggested that the bill be amended to clarify the Department's authority to embargo irradiated food products.

I understand that you are concerned that the department might incur additional expenses if irradiated products were detained. We do not believe this is the case. The authority does not require the department to stockpile or warehouse embargoed products.

In the seafood program, decomposed, misbranded, contaminated, or adulterated products are routinely embargoed. At times, these actions have involved hundreds of thousands of pounds of product. The Department has never warehoused any of this embargoed product.

Use of the embargo authority usually allows the department and violator to resolve the problem through an administrative action. Without embargo authority, the only options for resolution are through the injunction procedures in 17.20.280 or criminal prosecution under 17.20.310. Both of these avenues are time consuming, expensive, and may not remove the product from commerce.

Please let me know if I can provide any additional clarification.

Sincerely,

Dennis D. Kelso
Commissioner

Alaska State Legislature

HOUSE OF REPRESENTATIVES

Official Business

REPRESENTATIVE RANDY PHILLIPS
HOUSE DISTRICT 15
(907) 465-4949

P.O. Box V
State Capitol
Juneau, Alaska 99811

Memorandum

TO: Representative Ben Grussendorf
Chairman, House Rules Committee

FROM: Representative Randy Phillips RP

DATE: March 23, 1989

RE: Proposed Rules Committee Substitute for House Bill 25
Irradiated Foods

As requested by your staff, I have prepared a description of the differences between CSHB 25 (Finance) and the proposed substitute. I appreciate your consideration of this bill and would urge that the proposed substitute (marked 6-0222J, 2/13/89) be adopted by the Rules Committee.

Additionally, the Division of Legal Services has prepared a sectional analysis for the proposed substitute and that is attached to this memorandum.

Page/Line	Proposed Changes from Finance
1/6-12 (Title)	added to title: "authorizing embargo and detention remedies in the case of a violation of the prohibition against the sale of irradiated food;" change last word to "prohibitions" from "prohibition"
1/12-3/11	All deleted
1/14-22	Allows the Commissioner to embargo and detain. This amendment was requested by Representative Kay Brown and the Department of Environmental Conservation
1/23-2/1	Is similar to Section 2 in the Finance CS. Makes Department of Environmental Conservation responsible for enforcement and adds reference to irradiated foods

ATTACHMENT 1

Page/Line	Proposed Changes from Finance
	within the enforcement language.
2/2-9	Prohibits the knowing sale of irradiated food and defines irradiated food. Due to the February 9, 1989, memorandum from Legislative Counsel Bannister to the Co-Chairmen of House Finance, the language in the Finance CS was changed to the current proposal. The new language still accomplishes my goal of prohibiting the sale, manufacture and production within Alaska of irradiated foods.

For your information, I have attached a copy of the February 9, 1989, memorandum from Legislative Counsel Bannister.

Also attached is a copy of a letter from Commissioner Dennis Kelso of the Department of Environmental Conservation concerning the detain and embargo addition to the bill.

I have requested that Legislative Counsel Bannister and a representative from the Department of Environmental Conservation be present at your committee meeting to answer any technical questions concerning the proposed substitute.

If you have any questions, please do not hesitate to contact me.

STATE OF ALASKA
THE LEGISLATURE

POUCH V STATE CAPITOL
JUNEAU ALASKA 99811
907 465 3800

LEGISLATIVE AFFAIRS AGENCY

M E M O R A N D U M March 23, 1989

SUBJECT: Sectional analysis of CS HB 25( )
(6-0222J, 2-13-89)

TO: Representative Randy Phillips

FROM: Theresa L. Bannister TB
Legislative Counsel

You have requested a sectional analysis of the above described bill.

As a preliminary matter, note that a sectional analysis or summary of a bill should not be considered an authoritative interpretation of the bill and the bill itself is the best statement of its contents.

Section 1 authorizes the commissioner of environmental conservation to embargo and detain food that is the subject of a violation of the prohibition against the knowing sale of irradiated food, if the commissioner finds or has probable cause to believe a violation is occurring.

Section 2 indicates that the commissioner of environmental conservation (or the commissioner's designee) is responsible for enforcing the prohibition against the knowing sale of irradiated food.

Section 3 prohibits the knowing sale of irradiated food.

Section 4 defines "irradiated" as having been treated with gamma radiation or other ionizing radiation. Excludes irradiated spices from being considered irradiated food, and excludes food from being considered irradiated food if the only irradiated ingredients are irradiated spices.

TLB:kb
wkk3/032

STATE OF ALASKA
THE LEGISLATURE
LEGISLATIVE AFFAIRS AGENCY

POUCH V STATE CAPITOL
JUNEAU ALASKA 99811
907 465 3800

MEMORANDUM January 21, 1988

SUBJECT: Scope of irradiated food bill
(Work Order No. 5-1671)

TO: Representative Randy Phillips

FROM: Theresa L. Bannister TLB
Legislative Counsel

This memo accompanies the bill on irradiated food that you requested. Although sec. 1 of the bill does not prohibit the manufacturing of irradiated food, AS 17.20.340 indicates that the manufacturing would also be prohibited. AS 17.20.340 reads as follows:

> Sec. 17.20.340. SCOPE OF PROVISIONS DEALING WITH SALE. The provisions of this chapter regarding the sale of food, drugs, devices, or cosmetics include the manufacture, production, processing, packing, exposure, offer, possession, and holding of them for sale; the sale, dispensing, and giving of them, and the supplying or applying of them in the conduct of a food, drug, or cosmetic establishment.

Using the Alaska Food, Drug, and Cosmetic Act (AS 17.20) means that certain enforcement provisions in that Act, including criminal penalties (AS 17.20.310) and injunctive relief (AS 17.20.280), will apply to the enforcement of the irradiated food prohibition. Certain other provisions, including embargo and destruction of the items, would not apply to this prohibition as the bill is presently written; if you wish to have these provisions apply also, please advise.

If I may be of further assistance, please advise.

Attachment

TLB:gc
WKG1:036

STATE OF ALASKA
THE LEGISLATURE

LEGISLATIVE AFFAIRS AGENCY

POUCH V STATE CAPITOL
JUNEAU ALASKA 99811
907 465 3800

MEMORANDUM February 1, 1988

SUBJECT: HB 388 and the Commerce Clause

TO: Representative Randy Phillips

FROM: Theresa L. Bannister TB
Legislative Counsel

You have requested a written opinion on whether the prohibition in HB 388 against selling irradiated food in the state violates the Commerce Clause of the U.S. Constitution. The prohibition applies only to food sold in the state, and it does not directly regulate or discriminate against interstate commerce. The state has a legitimate interest in protecting the health and welfare of its citizens, and the bill appears to be a reasonable exercise of this power. Although the prohibition will affect interstate commerce, I cannot think of an interstate commerce effect of this bill that would be considered to clearly exceed the protection of the physical health of the state's citizens. Since the benefits of this legislation are intangible and cannot be effectively measured against its effects on interstate commerce, and since the effects on interstate commerce do not clearly exceed the benefits of the bill, it is likely that a court would uphold the legislature's decision to exercise the state's police power in this manner. For the above reasons it is my opinion that HB 388 would not be held to violate the Commerce Clause of the U.S. Constitution.

If I may be of further assistance, please advise.

TLB:gc
WKG1:058

ATTACHMENT # 3

STATE OF ALASKA
THE LEGISLATURE

LEGISLATIVE AFFAIRS AGENCY

POUCH V STATE CAPITOL
JUNEAU ALASKA 998
907 465 3800

MEMORANDUM March 10, 1988

SUBJECT: Federal preemption and CSHB 388(HESS)

TO: Representative Randy Phillips

FROM: Theresa L. Bannister
Legislative Counsel

You have requested an opinion whether the Federal Food, Drug, and Cosmetic Act (21 U.S.C. 301 et seq.) (herein FDCA) preempts the prohibition in CSHB 388(HESS) against the sale of irradiated food. Although I do not believe that the issue is strictly black and white, in my opinion the FDCA would not preempt this prohibition.

At the outset, there is no specific preemption provision in the FDCA for this area; the FDCA does not explicitly address state laws other than for margarine. Next, the proposed prohibition does not stand as an obstacle to the accomplishment and execution of the purposes and objectives of the FDCA, since the goal of the FDCA relevant to this inquiry is to protect the individual from unsafe food, and the goal of the proposed law is the same. Finally, the proposed law does not directly conflict with the FDCA. Although the FDCA allows the use of irradiation in certain foods, it does not mandate the sale of these foods, but merely prescribes the conditions under which such things as irradiation may be safely used in certain foods. (See 21 U.S.C. 348).

In addition, I believe that a court would hesitate to preempt this proposed law for two reasons. The first reason is that the prohibition of the sale of irradiated food in the state falls within the traditional police powers of the state to protect the health and welfare of its inhabitants. The second reason is that there is a growing reluctance of courts to infer federal preemption of state laws. 55 U. S. Law Week 2226.

In conclusion, I believe that it is unlikely that a court would hold that the prohibition proposed by CSHB 388(HESS) against the sale of irradiated food to be preempted by the Federal Food, Drug, and Cosmetic Act.

If I may be of further assistance, please advise.

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because it is misleading, in determining whether the labeling or advertisement is misleading, there shall be taken into account among other things representations made or suggested by statement, word, design, device, sound or combination of them, and the extent to which the labeling or advertisement fails to reveal facts material in the light of the representations or material with respect to consequences which may result from the use of the article to which the labeling or advertisement relates under the conditions of use prescribed in the labeling or advertisement or under customary or usual conditions of use. (§ 2(l) ch 129 SLA 1949)

Collateral references. — Products liability of manufacturer or seller for injury or death allegedly caused by failure to warn regarding danger in use of vaccine or prescription drug; 94 ALRJd 748.

Promotional efforts directed towards prescribing physician as affecting prescription drug manufacturer's liability for product-caused injury, 94 ALRJd 1030.

What constitutes 'false advertising' of food products or cosmetics within §§ 5 and 12 of the Federal Trade Commission Act (15 USCS §§ 45, 52), 50 ALR Fed. 16.

Sec. 17.20.310. Penalties. A person who violates the provisions of AS 17.20.290, upon conviction, is punishable by imprisonment for not more than six months, or by a fine of not more than $500, or by both. If the violation is committed after a conviction under this section has become final, the person is punishable by imprisonment for not more than one year, or by a fine of not more than $500, or by both. (§ 5(a) ch 129 SLA 1949)

Sec. 17.20.320. Effect of written guaranty. A person is not subject to the penalties of AS 17.20.310 for having violated AS 17.20.290(1) or (3) if that person establishes a guaranty or undertaking signed by and containing the name and address of the person residing in the state from whom the article was received in good faith, to the effect that it is not adulterated or misbranded within the meaning of this chapter. (§ 5(b) ch 129 SLA 1949)

Sec. 17.20.330. Liability for dissemination of false advertising. No publisher, radio-broadcast licensee, or agency or medium for the dissemination of an advertisement, except the manufacturer, packer, distributor, or seller of the article to which a false advertisement relates, is liable under AS 17.20.310 for the dissemination of the false advertisement, unless the publisher, licensee, agency or medium has refused the request of the commissioner of health and social services to furnish the name and post office address of the manufacturer, packer, distributor, seller, or advertising agency, residing in the state who caused dissemination of the advertisement. (§ 5(c) ch 129 SLA 1949; am Executive Order No. 51, § 31 (1981))

ATTACHMENT #4

any room, building, vehicle of transportation or other structure which is unsound, or contains filthy, decomposed, or putrid substance, or a substance that may be poisonous or deleterious to health or otherwise unsafe, is a nuisance. Whenever the commissioner of environmental conservation finds such an article, the commissioner shall immediately condemn or destroy it or in any other manner render it unsalable as human food. (§ 6(d) ch 129 SLA 1949; am Executive Order No. 51, § 28 (1981))

Effect of amendments. — The 1981 amendment added "of environmental conservation" following "the commissioner" in the second sentence.

Sec. 17.20.280. Injunction proceedings. The commissioner of environmental conservation and the commissioner of health and social services may apply to the superior court for, and the court has jurisdiction to grant, a temporary or permanent injunction restraining a person from violating their respective portions of AS 17.20.290. (§ 4 ch 129 SLA 1949; am Executive Order No. 51, § 29 (1981))

Effect of amendments. — The 1981 amendment added "of environmental conservation and the commissioner of health and social services" following "commissioner" and added "their respective portions of" following "person from violating"

Article 6. Prohibited Acts and Penalties.

Collateral references. — 25 Am. Jur. 2d, Drugs, Narcotics, and Poisons, § 40 et seq; 35 Am. Jur. 2d, Food, §§ 63 et seq., 74 et seq.

Sec. 17.20.290. Prohibited acts. (a) The following acts and the causing thereof are prohibited:

(1) the manufacture, or sale, or delivery, holding, or offering of sale of food, drug, device, or cosmetic that is adulterated or misbranded;

(2) the adulteration or misbranding of food, drug, device or cosmetic;

(3) the receipt in commerce of food, drug, device, or cosmetic that is adulterated or misbranded, and the delivery or proffered delivery of them for pay or otherwise;

(4) the sale, delivery for sale, holding for sale, or offering for sale of an article in violation of AS 17.20.050 — 17.20.070 and 17.20.100;

Alaska State Legislature
House

Official Business

REPRESENTATIVE RANDY PHILLIPS
HOUSE DISTRICT 15
(907) 465-4949

P.O. BOX V
State Capitol
Juneau, Alaska 99

Memorandum

TO: Representative John Sund
Chairman, House Judiciary Committee

FROM: Representative Randy Phillips

DATE: March 7, 1988

RE: Food and Drug Administration
House Bill 388

At the request of Peggy Sepulveda of your office, my staff contacted the Food and Drug Administration with a request that it provide someone to testify at the upcoming hearing on CSHB 388 (HESS).

Carl Dasser of the Federal-State Relations Division of Food and Drug Administration has advised me that the FDA cannot testify on this matter. According to Mr. Dasser, the Code of Federal Regulations prohibits the FDA from testifying before state courts, administrative hearings, state legislative committees, etc. unless (1) there is an official request (preferably written) from the person or committee requesting such testimony and (2) agency has had a chance to approve the testimony that is to be given. The FDA has been requested by other states to provide testimony on the issue of food irradiation and has uniformly refused to testify; therefore, it is, at this time, refusing our request to present testimony.

Mr. Dasser indicated that if you had any questions about the testimony process that he would be happy to address your questions. His telephone number is (301) 443-6200. If you wish to present the FDA with a written request for testimony and questions that you would like answered, please address this to: Heinz Wilms, Director, Division of Federal-State Relations (HFC-151), Food and Drug Administration, 5600 Fishers Lane, Rockville, MD 20857. If you or a member of your staff wishes to discuss the subject of food irradiation on an informal basis, please contact Mr. Dasser and he can make arrangements for someone from the Center of Food Safety to contact you.

Again, Mr. Dasser emphasized that since the FDA had turned down similar requests from other states, it felt it could not honor a request to participate in the hearing to be held this coming Wednesday.

ATTACHMENT #-6

Irradiating food growing preservation methoc

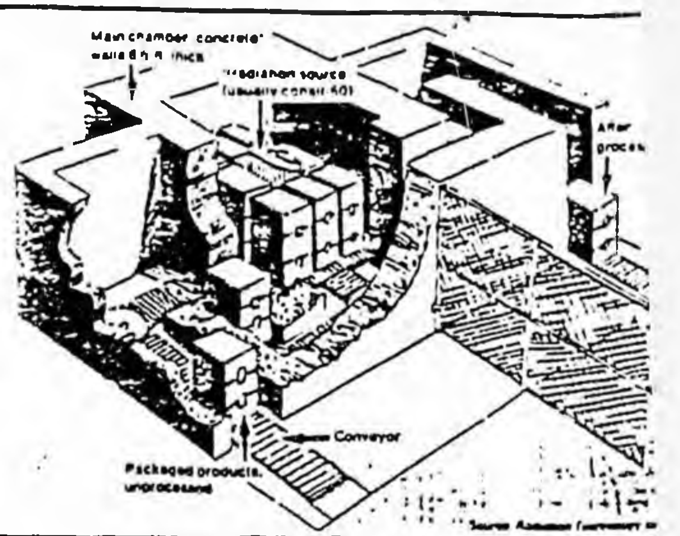
Most groups say irradiation is the safest way to keep food from spoiling and to kill bacte

...federal initiatives are paving the way for a significant increase in the use of irradiation on foods in the United States.

New Dept. of Health and Human Services (HHS) regulations, if approved by the Office of Management and Budget (OMB), will permit irradiation of pork and fresh fruits and vegetables. Sweeping legislation now before Congress would further encourage irradiation of foods — a practice considered beneficial because it destroys insects, parasites, and microorganisms, including those that cause disease and promote spoilage.

In irradiation, food is exposed to ionizing energy from radioactive isotopes of cobalt or cesium or from devices that produce controlled amounts of beta rays or x-rays. For at least 30 years, some food and food products, including wheat and potatoes, have been irradiated abroad without adverse effects. At least 28 countries now irradiate some foods.

But the process has been little used in the United States. Although existing Food and Drug Administration (FDA) regulations now allow irradiation for insect disinfestation in wheat, sprout inhibition in white potatoes, and control of microorganisms and insects in herbs and spices, only the latter use has been widespread.



THIS MAY CHANGE, however, as the HHS reviews new uses and regulations for irradiation:

- In July, 1985, HHS gave the go-ahead for irradiation in the processing of pork, a process that is believed to eliminate the threat of trichinosis even if the pork is undercooked or eaten raw. These regulations — with comment from the U.S. Dept. of Agriculture (USDA), which regulates pork — are nearing OMB review completion.
- Just before leaving office, HHS Secretary Margaret Heckler signed off on regulations that would permit the irradiation of fresh fruits and vegetables to kill pests and prolong shelf life.
- HHS is considering extending the irradiation process to poultry, and studies of this application are now under way.

FOOD IRRADIATION ALSO has occupied the attention of federal legislators recently. Four House committees are considering H.R. 696, a food irradiation development and control bill that would allow irradiation of many foods at regulated doses (the lowest level to achieve effectiveness).

Under the proposed legislation, the FDA would retain general authority to regulate food irradiation. But the definition of irradiation in the Food, Drug, and Cosmetic Act would be changed so that it would be regulated as a process, like boiling or freezing, rather than a food additive.

The legislation would also require national uniformity in the regulation of food irradiation and would create a commission to coordinate and consolidate all food irradiation research, encourage investment by private sources in food irradiation, and promote a wider public understanding through educational programs.

A companion bill, S 288, with similar provisions, has not been debated.

THE CURRENT INTEREST in food irradiation springs from concern about the safety of pesticides, particularly when used in the post-harvest disinfestation of fruits and vegetables. Specifically, the discovery in 1984 that the post-harvest fumigant ethylene dibromide (EDB) leaves a toxic residue on food — followed by the banning of EDB by the Environmental Protection Agency — encouraged consideration of irradiation as an alternative to pesticide use.

The FDA, HHS, and USDA — as well as other proponents — all contend that irradiation in low doses actually has a wide variety of beneficial applications. It eliminates trichinae spiralis in pork, the Medfly in citrus fruits, and the codling moth in apples; could destroy C. botulinum and salmonella in red meats, poultry, and fish; and extends the shelf life of fresh fruits, vegetables, and grains.

In November, 1985, the American Medical Association testified in favor of the proposed federal irradiation legislation before the House Agriculture Committee's subcommittee on Department Operations, Research, and Foreign Agriculture.

A. Harold Lubin, MD, director of AMA's Dept. of Foods, Nutrition, and Personal Health, testified that food irradiation produces no significant reduction in the nutritional quality of food and has a number of important beneficial effects, including killing the microorganisms that cause food spoilage.

JOSEPH A. LUIZZO, PHD, professor of food science at Louisiana State U. in Baton Rouge, praised the process as a food preservative.

"We've found that 90-95% of all bacteria are killed during the irradiation process," said Dr. Luizzo, who once worked under contract from the Atomic Energy Commission on food irradiation in the preservation of shrimp. "Food irradiation would allow the people in places like Iowa and Kansas to have fresh shrimp," he said, noting that his studies showed a 19-day shelf life for shrimp kept on ice after irradiation.

"There was no destruction of nutrients, either," he added.

THERE MAY BE drawbacks to the process. For example, research shows that some foods undergo color or texture changes when irradiated. Ironically, this may lead the public to assume that a food is not fresh when actually the shelf life has been extended.

In addition, some opponents to the process have suggested that food irradiation presents a hazard to the public and to plant workers.

Robert Alvarez, who is director of the Nuclear Weapons and Power Project of the Environmental Policy Institute, a public interest group based in Washington, D.C., testified before Congress that the irradiation of food involves an ultrahazardous technology, which he said "poses several types of risks to the public and workers."

Food irradiation facilities would generate as much as 10 times more low-level radioactive wastes than all sources combined in the United States for the year 1981, he said, adding that existing irradiation facilities are poorly regulated. Alvarez also contended that irradiation intended to eliminate one food hazard may introduce another — for example, by producing radiation-resistant bacteria and viruses.

Other critics, such as the Health and Energy Institute of Washington, D.C., another public interest group, claim that carcinogenic or genetic problems could arise from irradiating foods.

BUT THE MAJORITY of observers contend that irradiation is safe. HHS and FDA have both taken this position, as has the AMA.

"It is important to note that food irradiation does not make the irradiated food radioactive since it is done at energy levels well below those required to induce radioactivity," the AMA's Dr. Lubin said in testimony before Congress. He added that, given widespread public interest in nutrition and health, physicians will need to be in a position to reassure patients who are concerned about the safety of the process.

A committee formed by the World Health Organization to study the safety of food irradiation in other countries in 1981 issued a report on "The Wholesomeness of Irradiated Food." It called the process safe and "free of toxicological hazard."

In a lengthy report on food irradiation, the American Council on Science and Health, a national association that is devoted to consumer education, states the levels of radiation approved for treatment of foods "do not have enough energy to induce residual radioactivity in food."

The council also said that workers who take proper precautions need not suffer annual adverse health risks. Irradiation facilities must comply with regulations issued by the Occupational Safety and Health Administration, the Nuclear Regulatory Commission, and the FDA, the council noted.

THE SAFETY ISSUE of food irradiation has been a problem for HHS, which had difficulty finding an acceptable way to explain irradiation to the public. It wanted to require the use of the word "irradiation" for package labels because the word alone could arouse consumer fears and cause misunderstanding. HHS, against the advice of some in the industry, ultimately substituted the word "picowave," meaning low-level ionizing energy, for "irradiation."

Irradiated foods must now carry the word "picowaved" on their labels together with the international logo symbolizing irradiated foods. The circular symbol holds a stylized plant with two petals, developed in the Netherlands several years ago and is used on many packages of irradiated foods abroad.

Most of the handful of irradiation plants in this country currently earn their money by sterilizing medical equipment. Industry and some food processors have stated in reports that public endorsement of the irradiation process by one large, well-known food company would persuade consumers that the process is safe.

Irradiated foods must now carry the word "picowaved" on their labels together with the international logo symbolizing irradiated foods.

(Turn to p. ...)

ATTACHMENT # 7

History of Food Irradiation

1898 - Bactericidal effects of x-rays first observed.

1905 - Patents for food irradiation process first issued in United States and Europe.

1920 - U S patent granted for irradiating beetles in tobacco with x-rays.

1930 - French patent issued for preserving food by irradiation.

1943 - U.S. Army contracts with Massachusetts Institute of Technology to study feasibility of extending shelf life of food with irradiation.

1947 - MIT reports that shelf life of food can be extended through irradiation, offering a new method for assuring provisions for combat troops in remote battlefields.

1953 - U.S. Army Quartermaster Corps takes up food irradiation study at its laboratory in Natick, Mass., in conjunction with MIT, in federally funded study of irradiation of meat, fish, fruits, vegetables and dairy products.

1963 - U.S. Food and Drug Administration approves gamma irradiation to preserve canned bacon and for insect disinfestation of wheat and wheat products.

1964 - FDA approves irradiation for sprout inhibition of white potatoes.

1966 - FDA approves labeling requirements for irradiated foods.

1968 - FDA rescinds bacon irradiation rules after finding the studies on which original approval was made were based on poor laboratory quality controls.

Late 1960s - American astronauts and Russian cosmonauts begin eating radiation sterilized foods in space.

1969 - United Kingdom approves use of radiation sterilized foods in hospitals.

1975 - American astronauts and Russian cosmonauts share a meal of irradiated food in space aboard connection of Apollo-Soyuz capsules. Space explorers continue to dine on radiation sterilized food, as do others requiring such food in isolation, such as hospitalized bone marrow transplant patients.

1979 - FDA's Director of Bureau of Foods establishes the Irradiated Food Committee to provide a total reassessment of all relevant issues applicable to irradiated foods.

1981 - FDA publishes advanced notice of proposed rules on food irradiation in the *Federal Register*.

1981 - FDA offers to approve the use of irradiation for treating the California medfly crisis, provided certain conditions were met. Process not used because no person or organization applied for its use.

1983 - FDA approves irradiation of a specific list of spices and vegetable seasonings for microbial decontamination.

1984 (Feb. 14) - FDA publishes its proposed rule in *Federal Register* to allow irradiation of fresh produce for sprout inhibition, shelf-life extension and insect disinfestation of fresh produce and for sterilizing spices.

1984 (June 19) - FDA approves irradiation treatment to control insect infestation in garlic powder, onion powder and dried spices.

1985 (April) - FDA expands list of dried spices and vegetable seasonings that can be irradiated.

1985 (June) - FDA allows certain dried enzymes to be irradiated to control insect and microbial infestations.

1985 (July) - FDA approves low dose irradiation of pork and pork products to control trichinosis, the parasitic worm found in the muscles of some infected hogs.

1985 (December) - Canadian government announces it will allow food irradiation at up to 1,000 kilorads, 10 times the dose allowed in the United States, with only limited labeling requirements.

1986 (January) - The U.S. Department of Agriculture approves its own rules and guidelines for irradiating pork products.

1986 (April) - FDA publishes its final rule on post-harvest, low dose irradiation treatment of fresh fruits and vegetables and high dose irradiation of spices in the *Federal Register*.

1986 (June) - The British Advisory Committee on Irradiated and Novel Foods issues report recommending that food irradiation be legalized in the United Kingdom at doses up to 1,000 kilorads and that labeling be required.

1986 (June) - The People's Republic of China opens a commercial-size food irradiation plant in Shanghai and announces plans to build five regional food irradiation plants around the country.

1986 (July) - The U.S. Department of Energy announces it will build six regional food irradiation demonstration centers in the states of Alaska, Florida, Hawaii, Iowa, Oklahoma and Washington. A transportable cesium food irradiator is already operational under the DOE's Byproducts Utilization Program.

1986 (September) - Irradiated Puerto Rican mangoes go on sale in a one-time only test market in North Miami Beach, marking the first time in history that irradiated food is made commercially available in the U S. The two tons of irradiated mangoes, at $1.49 a pound, are sold out within a week.

1986 (September) - Canadians announce plans to open food irradiation demonstration center in Montreal.

1987 (January) - USDA's Animal and Plant Health Inspection Service's rules for irradiating Hawaiian papaya are published in the *Federal Register*.

1987 (February) - USDA's petition for irradiation of chicken and poultry products to control salmonella is published by the FDA in the *Federal Register*.

1987 (March) - FDA rejects requests to put a hold on its new food irradiation rules adopted in April 1986, pending its decision on whether to hold requested public hearing on the new rules.

1987 (March) - FDA publishes petition from Radiation Technology, Inc., requesting irradiation treatment of poultry to control salmonella. Petition is similar to one published in February by the USDA.

FDA'S L[illegible] FOODS AUTHORIZED FOR IRRADIATION

FOODS:

Fruits and Vegetables (April 18, 1986)
Pork (July 22, 1985)
Wheat, Wheat Flour
White Potatoes
Dried Enzyme Preparations

HERBS AND SPICES (Dried): (since July 1983)

Allspice	Cardamon	Cloves	Fenugreek	Manoram	Oregano	Poppy Seed
Anise	Celery Seed	Coriander	Garlic Powder	Mustard Seed	Paprika	Rosemary
Basil	Chamomile	Cumin Seed	Ginger	Mustard Flour	Parsley	Saffron
Bay Leaves	Chervil	Dill Seed	Grains of Paradise	Nutmeg	Pepper, Black and White	Sage
Caraway Seed	Chives	Dill Weed	Horseradish	Onion Powder	Red Pepper	Savory
Black Cumin	Cinnamon	Fennel Seed	Mace	Orange Petals	Peppermint	Sesame Seed

* All the above listed foods are *authorized* for irradiation. That means they could legally be irradiated at any time. Presently we know of no whole foods that are routinely being irradiated and sold on a retail level with the following exceptions:
Puerto Rican mangoes were test marketed on a limited basis in Miami, Florida in Sept. 1986. (See Consumers Take Notice, Vol. 1, No
A small amount of spices being used in processed foods.
Although they are considering a request from Radiation Technology Inc. the FSIS has not yet authorized any commercial irradiator to pork.

HOT NEWS

Cesium Salad

Brussels

Wild mushrooms in Belgium and Luxembourg have been found to contain dangerously high levels of radioactive cesium 16 months after the Chernobyl nuclear disaster in the Soviet Union, officials said yesterday.

A Luxembourg government official said it had banned the sale of one type of mushroom after tests showed cesium levels greater than recommended safety levels.

P.S.: Cesium never quits.

Home-Dumping

Radioactive Waste
Dump Plan Ratified

California has ratified a four-state compact that provides for the dumping of low-level radioactive waste in the state's eastern desert into the next century.

Legislation ratifying the pact was signed Thursday by Governor Deukmejian.

The bill by Assemblyman Steven Peace, D-Chula Vista, puts California into compliance with a 1980 federal law that requires the states to dispose of low-level radioactive wastes within their borders. If ratified by North and South Dakota and Arizona, it would be the first pact of its kind in the nation.

The waste — to be buried 40 feet underground in a dump site as large as three football fields — will consist of contaminated items, such as gloves, tools and other supplies used by hospitals, laboratories and nuclear plants. It will not include spent fuel from nuclear reactors

CHERNOBYL'S LEGACY

It seems radiation, like guilt, keeps on giving. According to a study of the April 26, 1987 Soviet accident by the Lawrence Livermore National Laboratory in Livermore, California, the nuclear accident released as much long-term radiation into the world's air, topsoil and water as all the nuclear tests and bombs ever exploded. The report goes further to say this long-term radiation may contain 50% more cesium-137 than the total radiation produced by all atmospheric tests. Cesium-137 does not decay into harmless products for more than 600 years.

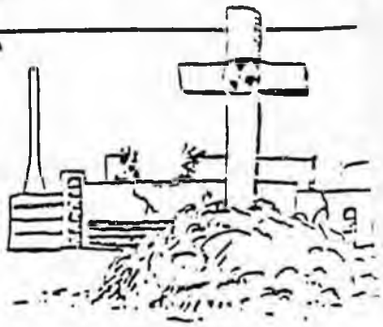
Using computer projections, Dr. John Gofman, Professor Emeritus of Medical Physics at the University of California (Berkeley), estimated that 1 million people, including over half a million outside the Soviet Union, will develop cancer as a result of the Chernobyl accident and half of these cancers would be fatal.

In a separate projection Ernest Sternglass, Ph.D., of the Radiology Department at The University of Pittsburgh, Pennsylvania, arrived at a similar estimate: 150,000-600,000 additional cancer deaths in Europe resulting from Chernobyl.

Both these estimates are derived from research by Dr. Abram Petkau, published in 1972 (the Journal of Health and Physics). Dr. Petkau's experiments showed that very low dose radiation over a prolonged period (protracted low dose exposure) produces unexpectedly large free radical damage compared to short exposures to medical x-rays or direct radiation from atomic fallout. This occurs, according to Petkau, because the free radical process becomes extremely efficient at low levels of radiation. Low dose radiation produces fewer free radicals which are statistically better able to do damage to the cell membrane. The insidious action of radiation on DNA in the cell produced mutations that lead to cancer, cancer is a free radical process. However, at high doses of radiation over a short period of time, the free radical process becomes very inefficient due to the extremely large number of free radicals generated per unit volume. These radicals are so reactive they smash into each other and literally wipe themselves out.

Dr. Petkau's observation seems to explain why less people died immediately after Chernobyl and Hiroshima than anticipated. Based on data from the Hiroshima experience, leukemia and other cancers are currently occuring among children and adults at 100-1000 times the predicted rate 40 ye[illegible] bomb.

You'd think we might have learned t[illegible] radiation is unforgiving.



LOOKING FOR THE K.O.

In the August 21st issue of the Food [illegible] newsletter, the editors of this industry analyzed the food irradiation controversy w[illegible] interesting insights.

"Food producers aren't enthusiastic a[illegible] process. They hesitate because of certain u[illegible] aspects of the technology, high costs and [illegible] rejection of irradiated foods as dangerous. B[illegible] share the anxiety about customer resistance

In an interview with Sharon Bomer ex-dir[illegible] The Coalition For Food Irradiation (CSFI), confesses "there were irradiation comman[illegible] tended to blow the issue out of proportion make fantastic claims." Bomer was talkin[illegible] companies in the business of irradiating [illegible] supplies and who wanted to move into food i[illegible] tion.

George Giddings, formerly of Isomedix, [illegible] pany that irradiates medical supplies, feels the hurt food irradiation was The Department of E[illegible] (DOE).

"The DOE program is the single most c[illegible] versy-raising aspect of food irradiation," Giddings. "The strident anti-nuclear types see a ploy of DOE in favor of the nuclear [illegible] industry. They see a conspiracy to push irradiation. . . If this program were eliminated there was no hypothetical possibility of implementing this cesium plutonium scenario, I think the crazy food irradiation controversy would evaporate in no time."

Bomer blames the commercial irradiators Giddings blames the DOE for the failure of irradiation. Both of them seem to ignore the fact the people in the anti-food irradiation movement have a deep commitment to safety of the food s[illegible] and the environment.

The Food & Drug newsletter editors conclude [illegible]

A Short History of Trouble

Irradiation Hall Of Shame

The industrial irradiation industry is relatively new. Created in the mid 1970's to sterilize medical supplies and packaging materials, this young industry has had a troublesome safety record. Problems have included radioactive leaks, spills, worker overexposures, failed or bypassed safety systems and failure to report to the Nuclear Regulatory Commission. The state of New Jersey hosts many of these problem plants. What follows is a summary of the 13 most significant incidents which have occurred in the last 12 years.

JUNE 16, 1974 Chief of radiation operations at the Isomedix irradiation plant in Parsippany, N.J. received an estimated 400 rem radiation dose, when he failed to take proper safety precautions. William McKim barely survived the one or two second overexposure to 147,000 curries of cobalt-60. Mr. McKim was in critical condition for one month before recovering.

1976-1980 In 1976 a double encapsulated cobalt-60 source was found leaking at the Isomedix irradiation plant in Parsippany, N.J. Following ion-exchange filtration, the source pool water was dumped down the plant's toilet. An extensive cleanup program followed which involved jackhammering concrete from the walls and floor of the source pool. During cleanup operation, Chem-Nuclear Corp. found the toilet and toilet pipe to be radioactive. Eventually, the toilet, tools, and parts of the source pool were shipped to a radioactive burial ground.

MARCH 14, 1977 The Nuclear Regulatory Commission fines Radiation Technology Inc. (RTI) $4050.00 following an October 1976 inspection which identified 10 violations of RTI's license. Violations incuded, failure to report a leaking cobalt-60 source, failure to adequately evaluate radiation doses to workers, disposing of radioactive material as normal trash and failure to provide required training to employees.

SEPTEMBER 23, 1977 An employee at the Radiation Technology Inc. (RTI) plant in Rockaway, N.J. entered the radiation cell for 10-20 seconds and received a whole body dose between 150-300 rems. The direct cause of the overesposure was a decision by RTI management to operate the facility with the safety interlock system inoperative.

SEPTEMBER 2, 1982 A service technician at the irradiation plant at the Institute for Energy Technology Norway, was exposed briefly to the 650,000 curie cobalt-60 source. The plant worker received an estimated dose of 1,000 rems, and died on September 15, 1982 from radiation injury.

JUNE 11, 1986 Radiation Technology Inc., cited in 1976 as a source of ground water pollution, was ordered by the State of New Jersey to pay a $600,000 directive to study the problem. Volatile organics such as trichloroethylene, methylene chloride, and trichloroethane were found in test wells drilled on RTI's 15 acre site in Rockaway, N.J. The toxic products were stored in 100 bulging, rusty, leaky 55 gallon drums on the company's property.

JUNE 24, 1986 A federal grand jury indicts Eugene T. O'Sullivan, San Jose, Calif., and Bruce J. Thomas of Somerville, N.J., both employees of International Nutronics Inc. (INI) of Palo Alto, Calif. INI and the two employees are charged with conspiracy, mail fraud, wire fraud, and concealing a radiation spill from the Nuclear Regulatory Commission (NRC). In 1982, INI found a leaking cobalt-60 source in their source pool. A cleanup was begun which involved pumping the radioactive water through filters. During the filter operations, which were left running unattended overnight, a discharge line became detatched, spilling radioactive water onto the floor of the plant. INI employees were then instructed to dump the water down bathroom drains and into the public sewer system. INI then delayed an NRC inspection and attempted to hide radiation contamination from inspectors. (see detail article in this issue)

JUNE 24, 1986 The Nuclear Regulatory Commission (NRC) revokes operating licenses for Radiation Technology Inc. (RTI) at their Rockaway, N.J. facilities. The license suspension comes after an NRC investigation into charges that RTI lied and deceived the NRC in regards to a March 3, 1986 shutdown. The March shutdown came after the NRC found RTI had bypassed safety equipment during plant operations, a repeat RTI failure, identical to the failure which lead to the worker overexposure in Sept. 1977. The NRC has turned this case over to the N.J. Justice Dept. for consideration.

SCIENCE BOX

COBALT-60 is a radioactive isotope of the metal cobalt. It is created by bombarding nonradioactive cobalt rods in a nuclear power reactor. Cobalt-60 gives off gamma rays and beta particles as it dec

REMS are an arbitrary measure of radiation effec on living tissue. Like degrees or pounds, the nu of rems increase as exposure to radiation increas One chest X-ray, given to a 150 pound adult give a dose of 5/100ths of one rem.

LIST OF THE 40 IRRADIATION FACILITIES IN THE U.S.

(not including those that can be found at hospitals of Universities)

This information was received by correspondence with the NRC (Nuclear Regulatory Commission)or the state licencer's who is in charge of radioactive materials. Information on the specific irradiation companies was received by correspondence or through phone calls with the companies.

ALABAMA - None

ALASKA - None

ARIZONA - None

ARKANSAS - (1) PROCESSED TECHNOLOGY INC., P.O. BOX 256, West Memphis, AR, 72301. They irradiate: Food(on reaearch basis), medical products, cosmetics and pharmaceutical products with Cobalt 60. P.T.I. is a subsidiary of Radiation Technology out of Rockaway, New Jersey.

CALIFORNIA - (3) INTERNATIONAL NUTRONICS INC., 1962 Barranca Rd.,Irvine, CA 92714 and INTERNATIONAL NUTRONICS INC., 1237 North San Antonio Rd., Palo Alto, CA 94303. They irradiate: Spices, Medical devices, medical products, electronic components, parts for nuclear reactors,gem sto and cosmetics. Cobalt 60 is used.
RADIATION STERILIZERS,1401 Morgan Circle, Tustin, CA, 92680. They irradiate: Spices, medical devices, and "Bag in a Box"- a plastic bag that slips into a cardboard box that wine comes in. Cobalt 60 is used.

COLORADO - (2) COBE LABORATORIES, 1185 Oak Street, Lakewood, Colorado, 80215—1107 They irradiate: Medical devices and Gem stones. Cobalt 60
IOTECH INC., 11080 Irma Drive, Northglenn, CO, 80233. They irradiate Medical products. Cesium 137 is used.

CONNETICUT - (1) BECTON DICKENSON, North Canaan, CT. Cobalt 60

DELAWARE - None

FLORIDA - (1) SHERWOOD MEDICAL, 2010 New Daytona Rd., Deland, Florida, 32720. They irradiate: Medical products. The Florida licensing office said they are aware of two other irradiation facilities both tentative as of Jan. 1987. One to be operated by a commercial firm out of Tampa and the other to be a joint facility by the D.O.E. and the Dept of Agriculture out of Gainsville. Construction by CH2M Hill. The commercial firm will irradiate strawberries and D.O.E. food.

GEORGIA - (1) RADIATION STERILIZERS INC., 2300 Mellon Court, Decatur, Georgia, 30035. They irradiate primarily medical supplies but also irradiate spices and "Bag in a Box." They use Cesium 137.

HAWAII - None

IDAHO -None

ILLINOIS - (3) ISOMEDIX INC.,7828 Nagle Ave., Morton Grove, ILL. 60053. They irradiate: Spices, disposable medical supplies, medical devices, nuclear device testing, cosmetic research and food research

ILLINOIS - (cont.) ISOMEDIX INC., 1880 Industrial Dr., Liberty, Ill., 60048 They irradiate: Some spices, disposable medical supplies, medical devices, some nuclear device testing, cosmetic resea and food research.
RADIATION STERILIZERS INC., 711 East Cooper Court, Schamberg, 60195. They irradiate: Spices, medical products, cosmetics, stones, and nuclear testing equipment.

INDIANA - (1) ELI LILLY AND COMPANY, Lilly Corporation Center, Indianapolis, Indiana, 46285. They irradiate: pharmaceutical products. (address: 307 East McCarty Street)

IOWA - None

KANSAS - None

KENTUCKY -None

LOUISIANA - None

MAINE -None

MARYLAND - (2) Both irradiators are NEUTRON PRODUCTS, 22301 Mount Ephraim Rd., Maryland, 20842. They irradiate: food stuffs (non-commercial), cosmetics, baby powder, hand lotion, cosmetics packing, gem stones, personal care products, nuclear reactors parts, polymers, and medical devices. One irradiator has one and a half million curies and the other 400 curies of Cobalt 60. Neutron Products is primarily involved in construction of Cobalt 60 rads.

MASSACHUSETTS - (1) ISOMEDIX, 435 Whitney Street, Northborough, MA., They irradiat some spices, disposable medical supplies, medical devices, some nuclear device testing, cosmetic research and food researc

MICHIGAN - None

MINNESOTA - (1) 3M (Minnesota mining and Manufacturing Company), 220 -2E-02, 3M Center, St. Paul, MN, 55144-1000

MISSISSIPPI - (1) ISOMEDIX INC., Industrial Park South, Box 2044, Columbus, MS, 39704. They irradiate: Some spices, disposable medical supplies medical devices, some nuclear device testing, cosmetic research, and food research.

MISSOURI - None

MONTANA _ None

NEBRASKA - (2) BECTON DICKINSON AND COMPANY, 150 South 1st, P.O. Box 686, Broken Bow, NE, 68822. They irradiate: Medical supplies only.
SHERWOOD MEDICAL, P.O. BOX 1169, Norfolk, NE 68701. They irradiate medical supplies.

NEVADA - None

NEW HAMPSHIRE - None

NEW JERSEY - (6) ISOMEDIX, 9 Apollo Drive, Whippany, NJ, 07981. They irradiate:

NEW JERSEY -(cont.) Isomedix- Some spices, disposable medical supplies, dental supplies, medical devices, some nuclear device testing, cosmetic research and food research.
ISOMEDIX.25 Eastmans Rd., Parsippany, NJ 07054. They irradi see above, Isomedix.
ETHICON, (Johnson and Johnson), Route 22, Sommerville, NJ, 08 They irradiate: Medical Products
RADIATION TECHNOLOGY,108 Lake Denmark Rd., Rockaway, NJ 07866 They irradiate: Food(research and development), medical devi cosmetics, Spices, electronic components, testing of nuclear devices, Gem stones, personal care products, and food packagi They use Cobalt 60.
PRECISION MATERIALS CORPORATION, Replogle Ave., Mine Hill, NJ 07801.
PROCESSED TECHNOLOGY, Salem: NJ. (Subsidiary of Radiation Technology. They irradiate: Food on a research basis, medical products, cosmetics, and pharmaceutical products. Cobalt 60 i used.

NEW MEXICO - None

NEW YORK - None

NORTH CAROLINA - (1) PROCESSED TECHNOLOGY INC., P.O. BOX 757, Haw river, NC, 27258 They irradiate: Food on a research basis, medical devices. cosmetics, and pharmaceutical products. (Subsidiary of Radiat Technology) Cobalt 60 is used with a 1.3 million curie sour

NORTH DAKOTA - None

OHIO - (2) ISOMEDIX, 4405 Marketing Place, Groaveport, Ohio, 43125, They irradiate: see Isomedix New Jersey.
RADIATION STERILIZERS, 305 Enterprise Drive, Westerville, Ohio, 43081. They irradiate: see Radiation Sterilizers, California. They use Cesium 137 for irradiation.

OKLAHOMA - None

OREGON - None

PENNSYLVANIA - (1) PERMAGRAIN PRODUCTS INC.,115 Reactor Road, Karthaus, PA. 16845. They irradiate: Manufactured floor products.

RHODE ISLAND- None

SOUTH CAROLINA - (2) BECTON-DICKENSON AND COMPANY, Airport Rd.. Sumter S.C., 29150. They irradiate: Medical Supplies.
ISOMEDIX, Highway 295, P.O. Box 3408, Spartanburg, SC, 29304 They irradiate: Some spices, disposable medical supplies, medical devices, some nuclear device testing, and food researc

SOUTH DAKOTA - (1) 3M, 601 22nd Ave., South, Brookings, SD 57006. They irradiate: Medical Products.

TENNESSEE -None

TEXAS - (6) RADIATION STERILIZERS INC., 3001 Wichita Ct., Ft Worth , TX, 76140. They irradiate : Spices, Food on a research basis, medical products, cosmetics, gem stones, and nuclear device testing.
SHERWOOD MEDICAL, 400 Maple Street. Commerce, TX. They

TEXAS -(Cont.) Sherwood Medical: Medical Products.
AMERICAN PHARMASEAL COMPANY: one Butterfield Trail, El Paso, TX 79906. They irradiate: Medical Products. (Two unit facility.)
ETHICON INC., P.O. Box 511, San Angelo, TX 76902. They irradiat Medical Products. (A Johnson and Johnson Company.)
SURGIKOS INC., P.O. Box 130, Arlington, TX 76010. They irradiate Medical devices. (A Johnson and Johnson Company)
JOHNSON AND JOHNSON, U.S. Highway 75 South, Sherman TX 75090 They irradiate: Medical Products.

UTAH - (1) ISOMEDIX, 9120 South 150 East, Sandy ,Utah, 84070. They irradiate: disposable medical supplies, some spices, some nuclear devices, cosmetics research and food research.

VERMONT - NOne

VIRGINIA - (1) APPLIED RADIANT ENERGY CORPORATION, 2432 Lakeside Dr., Lynchburg, Virginia, 24501. They irradiate: Spices, Flour, Wheat, Medical devices, Pharmaceutical products, Electronic components, personal care products, douches (expermental to date) and marine samplers.

WASHINGTON- None, But two are in the conceptual phase. One will be a fixed locati irradiator and the other a transportable unit for agricultural product

WEST VIRGINIA -None

WISCONSIN - None

WYOMING - None

NYPIRG
9 Murray Street • N.Y., N.Y. 10007 • 212-349-6460
(Albany Binghamton Buffalo Canisius Fredonia Long Island New Paltz) New York City Syracuse and Plattsburgh

NCSFI
NATIONAL COALITION TO STOP FOOD IRRADIATION

P.O. Box 59-0488, San Francisco, CA 94159 Phone: (415) 566-2734

NEWS RELEASE

FOR RELEASE:
December 17, 1987

FOR MORE INFORMATION CONTACT
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National Coalition to Stop Food Irradiation
John C. Savagian: (212) 349-6460
New York Public Interest Research Group, Inc.

ILLEGAL IRRADIATED INGREDIENT USED IN RICE-A-RONI & NOODLE-RONI MANUFACTURED BY SUBSIDIARY OF QUAKER OATS COMPANY OF CHICAGO

The New York Public Interest Research Group (NYPIRG) and the National Coalition to Stop Food Irradiation (NCSFI), today publicly announced that Quaker Oats Company, Chicago, Illinois, appears to be in direct violation of the Food and Drug Administration's April 18, 1986 Final Rule authorizing ionizing radiation treatment of certain approved foods. In a letter to NYPIRG, Quaker acknowledged that its subsidiary, Golden Grain Macaroni Company, has been using irradiated mushrooms in two of its products, CHICKEN & MUSHROOM RICE-A-RONI & CHICKEN AND MUSHROOM NOODLE-RONI.

Following receipt of the letter, a joint investigation by NYPIRG and NCSFI was conducted between October and December of this year. Their research revealed that Golden Grain was using mushrooms imported from Taiwan by Cade-Grayson Company, Vista, CA. Cade-Grayson says its irradiation is done in Taiwan and by Radiation Sterilizers Inc., Tustin, CA, and was formerly done by the defunct Precision Materials Corp., Mine Hill, New Jersey.

ATTACHMENT #12

In tracking down the use of the cobalt-60 irradiated mushrooms, NCSFI's Director, Denis Mosgofian learned in conversations with a source at Cade-Grayson that the mushrooms were currently being irradiated at an average absorbed dose of 1,000,000 rads, ten times the dose permitted for any food item (except spices, herbs and enzymes) sold in the United States. Imported food items, according to the FDA, must conform to FDA and USDA regulations for U.S. produced and processed foods. "Monitoring imports has always been our problem," said Dr. George Pauli of the FDA. Because the FDA has no test to determine if a food has been irradiated and at what dose, inspectors are helpless to stop illegal imports.

"This abuse of the irradiation approval illustrates our concern that the government was so eager to approve irradiation to accommodate the Department of Energy, that it simply ignored the consumer protection and inspection requirements for permitting nuclear food processing. It is because of this incident and a myriad of other health, environmental and worker exposure concerns that Congress must now demonstrate its concern for the American people and pass the Bosco/Mitchell bill, THE FOOD IRRADIATION SAFETY AND LABELING REQUIREMENT ACT OF 1987, HR 956 AND S 461. Congress must impose a moratorium on the use of irradiation. If Congress is waiting for a smoking gun, we have just found it!", said Mosgofian.

Further research revealed that the Food and Drug Administration has no capacity to either monitor or control food irradiation, and its regulation provides zero protection for consumers. FDA's regulation does not require user of irradiation to report to FDA either products being irradiated or the dose used. FDA's regulation fails to require irradiated ingredients be identified on labels, regardless of the item's importance or percentage of the final product. FDA has no test available to determine if a food has been irradiated, nor at what dose, or a test to determine if irradiation has been utilized to cover up contaminated or old food.

According to NYPIRG and NCSFI, Quaker Oats, in using irradiated mushrooms, violated the FDA April 1986 Final Rule. According to John C. Savagian, Coordinator of NYPIRG's Food Irradiation Project, the FDA ruling does not list the irradiation of dried vegetables as one of the food items allowed. "We find it disheartening that the minute we learn a company has begun to use irradiated foods, we also find immediate violations in their compliance with FDA guidelines," Savagian said.

NCSFI and NYPIRG have asked Quaker Oats Company as the parent company, to accept responsibility for the violations and recall the Golden Grain products. NCSFI and NYPIRG have

officially asked the Food and Drug Administration to request [illegible] have called on supermarkets nation-wide to withdraw the products from store shelves. NYPIRG and NCSFI have further asked FDA to investigate the promotion and sale of irradiated products by all dried vegetable distributors, and to request access to company records to determine if other illegally dried vegetables, fruits and possibly seafoods have been distributed to United States food processors. "These abuses may be the tip of the iceberg," said Mosgofian, "Our research verifies anti-food irradiation organizations' worst fears, that irradiation is nearly impossible to monitor and that consumers are without the slightest protection."

NYPIRG has alerted the Attorney General's Office of the State of Maine. Last May, Maine passed a law prohibiting the sale of irradiated foods. According to Savagian, the Attorney General's office has been in contact with Maine grocers, Quaker Oats and its subsidiary Golden Grain, and is now poised to get the affected Rice-A-Roni and Noodle-Roni off the shelves. Other state legislatures, such as New Jersey, are nearing completion of their own anti-irradiation bills. According to NCSFI's Mosgofian, citizens of Florida and Oregon are circulating petitions for ballot initiatives for November 1988 to ban food irradiation in their states, and the city and county of Santa Cruz, California, are preparing to enforce their local noticing ordinances which require grocers to post notices alerting consumers to irradiated foods.

"Having our national office in San Francisco, and being a proud native means that while Quaker continues to use irradiated ingredients in its Rice-A Roni products, we will never consider it a 'San Francisco Treat," said Mosgofian.

-30-

NYPIRG
9 Murray Street • N.Y., N.Y. 10007 212 349-6460
Offices in Albany, Binghamton, Buffalo, Centereach, Fredonia, Long Island, New Paltz, New York City, Syracuse and Rochester

NCSFI
NATIONAL COALITION TO STOP FOOD IRRADIATION
P.O. Box 594088, San Francisco, CA 94159 Phone: (415) 566-2734

Basic information regarding Quaker Oats Company's use of irradiated mushrooms

From: John C. Savagian, NYPIRG's Nuclear Issues Coordinator, and
Denis Mosgofian, Director, NCSFI

The Quaker Oats Company has admitted using irradiated mushrooms in its Golden Grain Chicken and Mushroom Rice-A-Roni and Chicken and Mushroom Noodle-Roni. This information came from a letter which Quaker sent to Phil West, an intern working with NYPIRG. We sent out questionnaires to the companies listed as supporters of the Coalition for Food Irradiation. When asked if they were using any irradiated products, Quaker not only said yes but also told us which products.

Golden Grain was purchased by Quaker a little less than a year ago. Jan Guifarro, Supervisor of Consumer Response Group at Quaker assured me that Quaker's policy of not using irradiated foods still stands and that Golden Grain started using irradiated mushrooms before the company became a part of the Quaker family. Her number is (312) 222-7111

The Quality Assurance Director of Golden Grain is Tom Ackart. Their office is in San Leandro, (415) 357-8400. Mr. Ackart was very helpful in providing us information. As you will note in the Quaker letter, the Company states that they had no choice in the matter, that the only products available were the irradiated mushrooms. Tom Ackart told us that they did have a choice, between treating them with fumigants and treating them with irradiation, and that their preference is not to use chemicals if they don't have to. But in fact, Golden Grain could have chosen freeze-dried mushrooms and avoided using irradiation, or they could have had them heat treated and avoided both chemicals and irradiation. Mr. Ackart also gave us the name of the company which supplied the mushrooms; Cade-Grayson.

Cade-Grayson is in California. P[illegible] 3, Vista, CA. The number is (619) 941-2733. Cade-Grayson (a distributor of dried [illegible] imported the mushrooms from Taiwan. They were then irradiated in Taiwan, Tustin, CA, and Mine Hill, N.J. Originally they were irradiated at a dose of 300,000, then 500,000 rads. These levels were considered not sufficient to kill all the microbials and the dose was raised to the current level of 1,000,000 rads. This is ten times the dose approved by the FDA for fruits and vegetables.

Recently, we have learned that the Attorney General's Office of the State of Maine is moving fast to have these products removed from the shelves. During a conversation with an assistant to the AG, Jeff Pidot, all basic information had been corraborated regarding Quaker's use of the products, and it was now considered to be an issue of what the Agriculture Department would do about the violation. The Attorney General is James Tierney, the phone number is (207) 289-3661.

The April 18th FDA ruling allows for the irradiation of fruits, vegetables for two reasons: slow sprouting and to kill microbials or insects on or in the product.

According to Cade-Grayson, there are two methods for preserving mushrooms, freeze drying and air drying. Freeze drying cost around $18 a pound while air drying cost only $7 a pound. Air drying however, does not kill all the microbials that would cause problems if the mushrooms were allowed to sit around on the shelf (as is the case with processed foods like Rice-A-Roni). Irradiation is thus added to the air drying process at a cost of only an additional .30 per pound. We have recently learned that California Vegetable Concentrates also purchases mushrooms from Taiwan, but instead of using irradiation or ethylene-oxide, the mushrooms are sent to West Germany were they are heat treated, clearly an alternative to chemicals and radiation.

WHAT ARE THE REGULATORY PROBLEMS WITH QUAKER USING THESE PRODUCTS?

According to sources in the FDA, there are three problems with this process:

1. Dried vegetables are not approved by the FDA for irradiation (see enclosed copy of FDA final rule, Friday, April 18, 1986);

2. It is illegal to import a food which is not legal to produce and use in the United States;

3. The dose of a million rads is ten times the approved dose set by the FDA on April 18, 1986, which is 100,000 rads, or radiation absorbed dose.

BACKGROUND ON THE COMPANY, CADE-GRAYSON

The two large public interest organizations learned that the importer, Cade-Grayson Company of Vista, California, has branches in Santiago, Chile and Miaoli Hsien, Taiwan.

Despite the fact that the jury is still out on the safety of consuming irradiated food, the Cade-Grayson Company "sold" Golden Grain on using irradiated mushrooms by telling the Rice-A-Roni producer that they were Cade-Grayson's only customer buying air-dried mushrooms without using irradiation, and that Cade-Grayson might have to add an upcharge for continuing to supply nonirradiated mushrooms to Golden Grain, according to Tom Ackart, Golden Grain's Quality Assurance Director.

Golden Grain was also sent a letter pursuading the reader to infer that other companies, such as Campbells, Land O' Lakes, General Foods and McCormicks were using irradiated products from Cade-Grayson. NYPIRG and NCSFI attempts to learn what other irradiated ingredients were being used by these companies have not been successful. The Quality Assurance Director of General Foods, White Plains, New York, stated it was proprietary information, while Director of Consumer Response was uncertain and said she would let us know. Uncle Ben's referred researchers to their legal department. Campbells denies using any irradiated ingredients in their products.

HOW MUCH OF THIS HAS BEEN SUBSTANTIATED?

Presently, the only information that we have in writing is the original letter that Quaker Oats sent to NYPIRG that started our investigation. That letter (also enclosed) only admits to the use of irradiated mushrooms, it does not mention at what dose, who supplied them or where they came from. It is extremely difficult to get anything in writing, although we are still trying. Obviously, it will be more difficult once this information goes public.

WHAT DO THESE PR[illegible]EMS MEAN FOR THE CURRE[illegible] LABELING REQUIREMENT?

Opponents of the present FDA ruling on irradiation have always argued that it is difficult for the public to learn which products are being irradiated and at what dose. The FDA does not require these companies to inform them they are using this process, and it has been left up to organizations like NYPIRG and NCSFI to try and track down the information. NYPIRG and NCSFI have twice surveyed the organizations listed as members of the Coalition For Food Irradiation. Many companies denied or have since withdrawn their support from the Coalition, and until the Quaker letter, only McCormicks admitted using irradiation spices.

We applaud the Quaker Oats Company and its subsidiary Golden Grain for informing the public, but it is quite possible that other food companies have not been truthful in answering our questions regarding the use of irradiated foods. The FDA has made a bad situation worse when it passed a weak label law. Presently, foods which contain irradiated ingredients do not have to be labeled. All irradiated fruits and vegetables require the Radura symbol and the words "treated with radiation" or "treated by irradiation." This coming April, the FDA will decide whether to drop the wording altogether.

Unfortunately, once we have alerted the public to this fact, as we have done regarding Quaker's Rice-A-Roni product, it is unlikely that any other company will voluntarily come forward and tell the public that it is using irradiated ingredients. Thus we are faced with the possibility that companies will be less forthcoming about using irradiated products at the same time that the FDA will relax an already weak labeling law.

WHAT SHOULD BE DONE ABOUT THIS?

1. We demand the immediate withdrawal of these products from food stores;

2. The Quaker Oats Company should accept responsibility for the actions of its subsidiary and recall the Rice-A-Roni products;

3. The State of Maine law prohibiting irradiated foods must be enforced, as should any other state, county or city law which has restrictions on the sale of irradiated foods;

4. The Food and Drug Administration should immediately access the records of Cade-Grayson Golden Grain, and all distributors of dried vegetables to determine the actual dosage for these products and investigate the course of action which lead to the illegal irradiation and introduction of these products into the United States; the FDA should, if need be, call on Quaker to withdraw its products from the shelves.

Further information can be provided by
John C. Savagian: (212) 349-6460 and
Denis Mosgofian: (415) 566-2734.

NCSFI
NATIONAL COALITION TO STOP FOOD IRRADIATION

P O Box 59-0488 San Francisco, CA 94159 Phone: (415) 566-2734

December 14, 1987

Howard Pippin, Director
Division of Regulatory Guidance
Food & Drug Administration
HFF-310
200 C Street, SW
Washington, DC 20204

Dear Mr. Pippin,

This letter to your office from our organizations is a formal request that the Food & Drug Administration investigate the illegal use of irradiated dried mushrooms by Quaker Oats Company and its subsidiary, Golden Grain Macaroni Company. Attached is a copy of a letter from Quaker Oats Company describing the use of irradiated dried mushrooms in two Golden Grain products, CHICKEN & MUSHROOM RICE-A-RONI, AND CHICKEN & MUSHROOM NOODLE-RONI.

Our joint investigation, including conversation with Dr. George Pauli, has determined that (1) dried and dehydrated vegetables are not approved for gamma irradiation; (2) these mushrooms have been and are currently being irradiated at an average absorbed dose of 1,000,000 rads, ten times the maximum permitted dose allowed by FDA; (3) these dried mushrooms are being irradiated at doses in excess of FDA approved limits both here in the United States, and in Taiwan, where the imports derive; and that (4) it is illegal to import irradiated foods not legally permitted to be irradiated and sold here in the US.

Since FDA's Final Rule permitting irradiation of fresh vegetables et al does not require retail ingredient labeling, consumers in the United States are without protection from the effects of irradiation, and are denied the ability to make an informed choice.

Our organizations, on behalf of the American people, our own constituents and member organizations, ask the FDA to (1) investigate Quaker Oats Company and Golden Grain Company use of irradiated dried mushroms; (2) investigate the importing firm, Cade-Grayson Company, for both illegally importing irradiated

dried mushrooms, and offering a host of irradiated fruit, vegetable, fruit and seafood products, some of which may be illegaly irradiated, and at doses apparently far in excess of FDA approved limits; (3) order a recall by Quaker & Golden Grain of all their products containing illegally imported and irradiated ingredients; (4) request the company records of Cade-Grayson Company to determine what other irradiated products have been imported, at what doses irradiated, to whom distributed, in what products they were incorporated and sold; (5) order Cade-Grayson, and other distributors of dehydrated vegetable, fruit and other food products to cease and desist distribution of irradiated products in violation of the FDA regulation governing irradiation of food. We ask that FDA ask Quaker & Golden Grain to publicly accept responsibility for the illegal use of irradiated dried mushrooms and any other product they may have used, and that the public be notified that these products are being recalled.

Our organizations hereby insist FDA amend its labeling regulation for irradiated foods to include all irradiated ingredients, and also make all labeling provisions of the regulation permanent.

NCSFI & NYPIRG await a reply and will make available to your agency our research and files.

Sincerely,

Denis Mosgofian

Denis Mosgofian
Director, NCSFI

John Savaglan
Coordinator, Food Irradiation Project
NYPIRG

DM:du
cc: Quaker Oats Company
Golden Grain Macaroni Company
Cade-Grayson Company.
NCSFI/NYPIRG Network
Media
Congressmembers
Attorney Generals: States of Maine, California, New Jersey, New York, Hawaii, Alaska, Florida, Vermont

DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Food and Drug Administration
Washington DC 20204

MAR 0 1 .

Honorable Randy Phillips
[illegible]
[illegible]

Dear Mr. Phillips:

In a recent telephone conversation with Ms. Janet Sibbet of your staff, Ms. Sibbet requested information about the status of irradiated mushrooms that were used as ingredients in their food product. I have enclosed a copy of FDA's response to the legal counsel of Golden Grain.

I hope this information is adequate to resolve your concerns.

Sincerely yours,

Clyde A. Takeuchi
Clyde A. Takeuchi
Division of Food and Color Additives
Center for Food Safety
and Applied Nutrition

Enclosure

APR 7

Richard L. Frank
Olsson, Frank and Weeda, P.C.
Suite 400
1029 Vermont Avenue, N.W.
Washington, D.C. 20005-3589

Dear Mr. Frank:

This is in response to your letter of January 20, 1988, concerning the use of irradiated mushrooms by your client, the Golden Grain Company, San Leandro, California. You stated your belief that dry mushrooms may be irradiated for use in food products under the provisions of 21 CFR 179.26.

I have carefully reviewed the arguments that you make in your letter, as well as the agency regulation and the regulatory history leading to the adoption of that regulation. On the basis of that review, I conclude that Golden Grain's use of mushroom bits treated with radiation is not consistent with FDA's regulation permitting irradiation of dry minor ingredients.

The regulation permits the irradiation of five classes of aromatic vegetable substance: culinary herbs, seeds, spices, teas, and vegetable seasonings. You have stated that mushroom bits should be considered as vegetable seasonings that may be irradiated under the authority of that regulation.

We agree that mushrooms may be considered as vegetable substances within the intent of this regulation but it is questionable, at best, whether mushrooms are "aromatic" or whether they are appropriately classified as "vegetable seasonings".

When FDA used the term "vegetable seasoning" in its regulation, FDA intended those vegetable substances that are used in the manner of spices and had no intention of including vegetable pieces used in the same manner as the vegetables themselves. Vegetable pieces that are used in the manner typical of vegetables, including the use described in section 155.220, may constitute a higher portion of the diet than FDA considered either in the 1984 proposal listing specific substances or in its final rule using generic terminology. Although not applicable in the case of mushrooms, the interpretation of the word "seasoning that you suggest would include substances of nutritional value. FDA stated that the dry minor ingredients to be irradiated were not sources of nutrients.

Although we disagree with you that the regulation authorizes the irradiation of mushroom pieces, we recognize that the wording of the regulation may allow for differing interpretations. Therefore, we intend to amend the wording in the near future to prevent misunderstanding. Because your client has voluntarily stopped the use of irradiated mushroom pieces, we see no need for any regulatory action on our part. Also, because any remaining safety concern by FDA concerning dry foods is limited to chronic use of such foods, we see no safety need to recall products that may have been distributed.

Finally, your letter refers to a letter from Dr. Clyde Takeguchi, stating that dry strawberry seeds are not aromatic vegetable substances, as an "FDA advisory opinion." Please note that only those opinions issued by FDA under 21 CFR 10.85 are properly considered as advisory opinions. As stated in 21 CFR 10.85(k), a letter such as the one you cited is an informal communication that represents the best judgment of that employee but does not constitute an advisory opinion and does not bind or otherwise obligate or commit the agency to the views expressed.

Sincerely yours,

/s/

L. Robert Lake
Director, Office of Compliance
Center for Food Safety
and Applied Nutrition

January 20, 1988

L. Robert Lake
Director
Office of Compliance
Food and Drug Administration
Federal Building 8
Room 5807
200 C Street, S.W.
Washington, D.C. 20204

Re: Interpretation of 21 C.F.R. § 179.26(b)

Dear Mr. Lake:

This letter is submitted on behalf of the Golden Grain Company, San Leandro, California, as a follow-up to our conversation of Friday, December 18, 1987. As discussed, we seek Food and Drug Administration (FDA) confirmation that Golden Grain's prior use of irradiated dried mushroom bits to season one of its dried rice and one of its dried noodle products complied with the agency's regulation regarding the use of ionizing radiation for the treatment of food. While Golden Grain has discontinued using the irradiated mushroom bits as of December 7, 1987, we ask that you expeditiously review this request and confirm our view that Golden Grain's use of mushroom bits treated with ionizing radiation was consistent with current regulation. Your decision in this matter will send an important signal to the food industry and consumers regarding the agency's resolve and commitment to support and defend the expanded irradiation rule.

FACTS

As you are aware, Golden Grain manufactures a variety of dry rice and noodle products. These products, frequently used as side dishes or entrees, are almost universally flavored or seasoned with tiny bits of dried meat, poultry, and/or vegetable ingredients. For a period of time during 1987, Golden Grain incorporated as an ingredient in two of these products irradiated dried mushroom bits. These dried bits

accounted for only a very small percentage of the products' composition, ranging from 0.88% - 2.186%. According to our supplier, Cade-Grayson, Inc., of Vista, California, the mushroom bits used in these products had been exposed to ionizing radiation in a dose of not less than .4Mrad to not more than 1.0Mrad.1/

The purpose of incorporating the dried mushroom bits was to flavor or season the product.2/ The ingredient provided very little, if any, nutritional value.

REGULATORY FRAMEWORK

The regulations currently provide that ionizing radiation may be used:

> for microbial disinfection of the following dry or dehydrated aromatic vegetable substances; culinary herbs, seeds, spices, teas, vegetable seasonings, and blends of these aromatic vegetable substances. 21 C.F.R. § 179.26(b) (emphasis supplied).

Ionizing radiation may be used on this category of ingredients at up to 3Mrad. Golden Grain's supplier exposed the mushroom bits to considerably less ionizing radiation (.4 - 1.0Mrad) than currently permitted by the regulation.

The preamble to the final regulation indicates that FDA described the substances permissibly subject to radiation treatment as "dry or dehydrated aromatic vegetable substances" so that the class of permissible substances would be "more comprehensive" than that listed in the proposed rule. 51 Fed. Reg. 13376, 13381 (April 18, 1986). The proposed rule would have allowed ionizing radiation treatment of only a specified list of dried spices and dried vegetable seasonings. See 49 Fed. Reg. 5714, 5722 (February 14, 1984). The revised rule was designed to expand upon those limited ingredients, such as

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1/ Cade-Grayson for a period of time imported the mushrooms from Taiwan in cartons marked as having been treated with radiation. These products were granted entry into the U.S. by Customs and the FDA. Subsequently, rather than importing irradiated mushrooms, the mushrooms were irradiated in the U.S.

2/ See Attachment A (letter of M. G. Heydanek).

spices, previously permitted to be subjected to ionizing radiation. See former 21 C.F.R. § 179.22.

Interpretation

Because the revised rule was designed to expand upon those food substances which may be subjected to ionizing radiation, Golden Grain believes that dried mushroom bits, used to season dry rice or noodle dishes, properly fall within those "vegetable seasonings" permissibly treated with radiation under the letter and spirit of the revised rule. Further support for this position can be found in an FDA advisory opinion, and other FDA regulatory provisions dealing with seasonings and vegetables.

In an August 6, 1987, letter to Bruce Meyer, Vice President, Radiation Sterilizers, Inc. (Attachment B), addressing the issue of whether dried strawberry seeds may be considered a "dry or dehydrated aromatic vegetable substance" so as to allow radiation treatment for microbial disinfection, Dr. Clyde A. Takeguchi of FDA's Division of Food and Color Additives stated that "[i]n developing its regulation, FDA used the term 'aromatic vegetable substances' to describe substances that are used for their aroma and flavoring properties" (emphasis supplied), distinguishing substances that are used for "texture modification and mouth-feel." This advisory opinion indicates that whether a given substance is an "aromatic vegetable substance" turns on its use in the food product. Golden Grain uses its dried mushroom bits to season and flavor the products in which they are an ingredient. This use comports with the use prescribed in the advisory opinion; therefore, dried mushroom bits should properly be considered a "vegetable substance" under the regulation.

The term "vegetable seasoning" is not currently defined in the FDA regulations. For the purpose of establishing tolerances or limitations for the use of direct and indirect food additives, FDA has established general food categories. "Seasonings" are grouped along with herbs, seeds, spices, blends, extracts, and flavorings. See 21 C.F.R. § 170.3(n)(26). "Fresh vegetables" are grouped together with tomatoes and potatoes at 21 C.F.R. § 170.3(n)(19). Mushrooms

are acknowledged to be vegetables under federal regulations. See 21 C.F.R. § 155.201.3/

Golden Grain believes its use of the dehydrated mushrooms should qualify as "vegetable seasonings" because the mushrooms are dehydrated, therefore differentiating them from "fresh vegetables". Moreover, the mushroom bits are extremely small, and used in very small amounts to season or flavor the rice and noodle dishes -- not as a vegetable or other food ingredient to nutritionally contribute to such products, and not for texture modification or mouth-feel. Thus, based upon prevailing definitions, Golden Grain believes its use falls within the definition of "vegetable seasonings".

A number of FDA standards of identity specifically permit a variety of dried vegetable ingredients to be used and identified as "seasonings". For example, the standard of identity for canned green beans and canned waxed beans, 21 C.F.R. § 155.120, identifies "[p]ieces of green or red peppers or mixtures of both, either of which may be dried, or other vegetables not exceeding in total 15% by weight of the finished product" as permissible optional ingredients. 21 C.F.R. § 155.120(a)(3)(x) (emphasis supplied). Under the labeling provisions of this standard, the small pieces of dried vegetables may be declared as "seasoned with green peppers". 21 C.F.R. § 155.120(a)(4)(b). Under this standard, the declaration "seasoned with ..." in labeling to indicate use of pieces of red or green peppers up to 15% is an appropriate regulatory description. By analogy, bits of dried mushroom in Golden Grain's products that are present up to 2.2% should properly be designated as "vegetable seasonings" and,

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3/ 21 C.F.R. Part 155 generally governs "canned vegetables". Similarly, USDA classifies mushrooms as vegetables. See 7 C.F.R. §§ 51.3385-51.3398, 51.3435-51.3449, 52.1481-52.1495. 7 C.F.R. Part 51 generally governs "fresh fruits and vegetables and other products (mushrooms not included among the "other products"), and 7 C.F.R. Part 52 generally governs processed fruits and vegetables, processed products thereof, and certain other processed food products (mushrooms not included among "other processed food products").

therefore, within the scope of the ionizing radiation regulation.4/

Several other FDA standards of identity similarly provide for the optional use of "pieces" of "vegetables" or "seasonings" up to 10% - 15%. These vegetable seasoning ingredients are authorized to be identified on the label as "seasoned with...." See e.g.s, 21 C.F.R. §§ 155.130(a)(3)(xii)(b), (a)(4)(canned corn); 155.170(a)(2)(xiii)(a), (a)(3)(ii)(b)(canned peas); and 155.190(a)(2)(vi-vii), (a)(5)(ii)(b)(canned tomatoes). These regulatory provisions make clear that bits or pieces of dried vegetables are commonly understood to be "seasonings".5/

Finally, FDA confirmation that dried mushroom bits are permissibly treated with ionizing radiation would be consistent with the general rationale underlying radiation treatment of spices and seasonings. The preamble to the proposed rule indicates that use of radiation with dried spices and dried vegetable seasonings raises less concern than use with fresh fruits, vegetables, and other foods because the quantity of radiolytic products produced by radiation directly relates to the amount of water contained in the food. 49 Fed. Reg. at 5716. Because the mushroom bits Golden Grain incorporates into its products are dried, like spices, they raise few, if any, concerns. Moreover, like any vegetable seasoning, dehydrated mushroom bits, present at between 1-2.2%, raise few, if any, concerns because of the relatively small quantity used.

We believe the dried mushroom bits previously used in Golden Grain's two products warrant the same regulatory treatment as spices and other vegetable seasonings. If appropriate, we would be pleased to meet with you to discuss this matter. Moreover, we think FDA confirmation of our belief important because both the food industry and public interest groups are vitally interested in FDA's willingness to defend

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4/ Under USDA regulations, the use of very small amounts of meat or poultry to season or flavor soup or similar products subjects the product to a "flavored with" or "seasoned with" labeling requirement. See 9 C.F.R. § 381.15(e).

5/ Similarly, a report of the Codex Alimentarius Commission indicates that in the U.S. certain dehydrated vegetables such as celery, bell peppers, onion and garlic are considered spices. See Attachment C.

the expanded scope of its regulation and support the use of radiation technology. We greatly appreciate your cooperation and assistance in quickly resolving this important issue.

Sincerely,

Richard L. Frank
David F. Weeda
Counsel to the Golden Grain Company

RLF:sdd

GOLDEN GRAIN

December 28, 1987

M. Schramm - Chicago (Law Department)

cc: V. Sval
J. Van Atta
RMS

MUSHROOMS IN GOLDEN GRAIN PRODUCTS

The principal reason for creating side dish products is to provide the consumer options and variety. A highly desirable flavor combination with rice and noodles is the blend of meat flavor (chicken or beef) with the earthy flavor of mushrooms. Mushrooms are commonly used as a flavor adjunct in a wide variety of food recipes. Specifically in RAR Chicken and Mushrooms and NR Chicken and Mushrooms, the flavor of the added mushrooms provides a unique flavor combination that is found to be highly accepted and desired by consumers of these type products. The mushrooms are added to provide a unique flavoring/seasoning to the rice/pasta or noodle side dish products. The mushroom seasoning flavor added is designed so that the flavor combination of the chicken and mushroom seasoning is a unique and balanced blend that appeals to a wide range of consumers.

As a professional food/flavor technologist, I consider the addition of mushroom flavor/seasoning to be a principal tool available to me for creation of products that appeal to our segment of the consuming public. I use mushrooms, whether whole, sliced, kibbled, or powdered, as a source of seasoning flavor that modifies other base flavors, i.e., rice, noodles, meat seasoning, etc. In my opinion they are no different than the addition of salt, onions, or spices in the actual practice of providing products with flavor variety. There is no other way to provide consumers this type of desired flavor sensation, and I consider it a major tool in the formulation of new, unique products for the consumer.

I would be happy to discuss further at your convenience.

M. G. Heydanek
Assoc. Director
Golden Grain R&D

MGH/scu

codex alimentarius commission

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

WORLD HEALTH ORGANIZATION

JOINT OFFICE: Via delle Terme di Caracalla 00100 ROMA Tel. 57971 Telex 610181 FAO I Cables Foodagri

Agenda Item 8

CX/FH 88/8
August 1988

JOINT FAO/WHO FOOD STANDARDS PROGRAMME
CODEX COMMITTEE ON FOOD HYGIENE
Twenty-First Session
Washington, D.C., 12-17 September 1988

SPICES AND HERBS*

Part I - Production Processing and Microbiology

INTRODUCTION

Spices are any of various aromatic vegetable (plant) products used primarily to season, flavor, or to impart an aroma or color to foods and beverages. Condiments are spices alone, or blends of spices which have been formulated with other flavor potentiators to enhance the flavor of foods. The International Organization for Standardization (ISO) has adopted "Spices and Condiments" as its official nomenclature. ISO has defined more than seventy spices and herbs (15). In the U.S. spice trade certain dehydrated vegetables (celery, garlic, onion, bell peppers) as well as some additional seeds (poppy, sesame) are included as spices. The characteristics and nomenclature of all recognized spices and condiments has been reviewed by PRUTHI (30), (31). Definitions and specifications for imported and domestic raw and processed spices can be found in various government publications (28), (22), (32), (36) and trade association documents (1).

*Prepared by Mr. M.A. Epstein (U.S.A.)

...ENT OF HEALTH & HUMAN SERVICES

Public Health Service

Food and Drug Administration
Washington DC 20204

AUG - 6 1987

Bruce Meyer
Vice President
Radiation Sterilizers, Inc.
3000 Sand Hill Road
Bldg 84-245
Menlo Park, CA 94025

Dear Mr. Meyer:

This is in response to your June 24th letter asking whether dried strawberry seeds can be considered as a dry or dehydrated aromatic vegetable substance under 21 CFR 179.26(b) and irradiated for microbial disinfection at doses not to exceed 30 kGy..

In developing its regulation, FDA used the term "aromatic vegetable substances" to describe substances that are used for their aroma and flavoring properties. This is different from substances used for texture modification and mouth-feel. (See enclosed definitions of technical effects of food ingredients, §170.3(o).) You state that the strawberry seeds are separated from the berries and dehydrated for later use as an ingredient in the preparation of various strawberry flavored desserts or snacks.

We do not believe that dried strawberry seeds can be considered an aromatic vegetable substance because we have no information to indicate that strawberry seeds are used as a strawberry flavoring substance. The strawberry seeds appear to be added to modify the texture and mouth-feel of the food. Thus, dried strawberry seeds may not be irradiated for microbial disinfection at doses not to exceed 30 kGy under the current regulation.

We believe the regulation would have to be amended to cover the use you propose.

Sincerely yours,.

Clyde A. Takesuchi, Ph.D.
Division of Food and Color Additives
Center for Food Safety
and Applied Nutrition

Enclosure

FOOD and WATER, INC.
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FOOD IRRADIATION: A SUMMARY

Prepared by:

Food and Water, Inc.

September 15, 1987

Dr. Walter Burnstein, Chairman

Dr. Judith Johnsrud, Research Director

Contact Person:
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ATTACHMENT # 13

PROBLEM STATEMENT

Food irradiation, approved in 1986 by the FDA, is a process which will potentially allow for the exposure of much of our national food supply to recycled radioactive materials derived from radioactive waste.* Proponents maintain that the safety of the process has been documented. They claim the benefits offered by food irradiation are extension of food shelf life, destruction of insect pests, control of bacterial growth or actual sterilization of foods at very high radiation doses, and control of the ripening time of some crops.[1] They also claim it will increase profits for farmers and help to solve the problem of world hunger.

Critics counter these claims with evidence that food irradiation warrants caution. They raise five major areas of concern: human health and safety hazards, environmental and transportation hazards, food irradiation's potential role in weapons fabrication, its potential significance as a partial "solution" to the high-level radioactive waste disposal problem, and questions about the safety of the process in light of existing safe alternatives.

Human Health and Safety Hazards

Despite proponents' claims of safety, experts[2] note that there are significant uncertainties and potentially severe health hazards associated with food irradiation, including, though not limited to, the following:[3]

1. The destruction or chemical modification of essential vitamins and minerals such as vitamins C, E, and K, amino acids (such as methionine), fats and carbohydrates; [4]

2. The formation of organic free radicals** which may react with molecular oxygen to produce peroxides, ketones, aldehydes and epoxides, which, after ingestion, can react with cellular DNA to cause mutations and cancer;[5]

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* In this process, food is introduced into an irradiation chamber on a conveyor belt and exposed to gamma radiation from cobalt-60, cesium-137 or an electron beam from machine generated sources. The length and dose of exposure varies depending on the food being irradiated and the purpose of the irradiation. The food then exits the chamber and may later be sold for public consumption.

** Free Radicals are molecular fragments in which some of the valence electrons remain free, i.e. they do not partake in bonding. In other words, they are short-lived unstable fragments of stable molecules to which extra electrons are attached. They are produced by molecular exposure to radiation or by chemical reaction. Free radicals are very efficient in destroying cell membranes and attacking DNA. They can be formed from many different molecules but one of the most important is O2- which is known as Super Oxide. This toxic form of oxygen is recognized as playing a crucial role in most lethal human diseases e.g. cancer, heart attack, stroke and emphysema. Super Oxide has an impact on virtually every form of human disease as a result of indirect chemical damage to the human cell.

3. Creation of an environment where toxic radiation-resistant organisms are freed from competition with less resistant ones and can multiply unchallenged; (Example: radiation doses required to kill botulin-producing bacteria are higher than those which kill off the bacteria that cause salmonella and those which, by bad taste or smell, indicate food spoilage. Food thus exposed to "insufficient" radiation will kill off the latter but leave dangerous pathogens to thrive without detectable signs of spoilage.)[6]

4. The stimulation and rapid division of fungi which create aflatoxins (naturally occurring potent carcinogens) that may grow as much as 50 times more rapidly on foods that have been irradiated;[7]

5. The creation of chemicals called radiolytic products, many of which are unique to the specific food being irradiated, appearing nowhere else in nature and having never been consumed by humans; their potential health impacts are unknown and untested;[8]

6. Chromosomal abnormalities which have been linked to leukemia;[9]

7. Induction of testicular tumors;[10]

8. Kidney damage, possibly auto-immune in nature, called glomerulonephropathy, which is chronic and can result in death;[11]

9. Increased death rate in offspring of animals fed irradiated food;[12]

10. Increased abnormal white blood cell count which indicates that chromosomal damage may be developing.[13]

As this list indicates, food irradiation poses numerous potential hazards to the consumer. The government, however, has not demanded scientific validation of the safety of food irradiation as a precondition for its approval. The FDA states that "Studies of sufficiently high quality to support the safety of irradiated food...are...not available.* Normally, FDA regulations require that the safety of any additive or preservative be demonstrated prior to its use in our food. Food irradiation was approved on the basis of theoretical calculations, with the FDA assuming that the potential hazards are insufficient to be regarded as genuine health threats. The final FDA task group report on the issue stated that irradiated food "...should be exempt from any toxicological testing requirements."** Experts who have reviewed these studies, however, come to a strikingly different conclusion. Dr. Donald Louria, Chairman of the Department of Preventive Medicine and Community Health at the University of Medicine and Dentistry of New Jersey, conducted a careful review of the studies accepted by the FDA and concluded as follows: "Taken together, these studies could not possibly

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* U.S. Department of Health and Human Services, Public Health Service, Food Additives Evaluation Branch, "Final Report of Task Group for the Review of Toxicology Data on Irradiated Foods", April 9, 1982. (See Appendix A.)

** Ibid.

establish the safety of food irradiation. Indeed, two of the studies suggest the technology is not safe."*

The fact that unanswered safety questions do in fact exist is amply demonstrated by the following scandal which occurred in England during the summer of 1986.

> A shipment of prawns arrived in England from the Far East. Food inspectors refused the shipment due to an excessively high bacterial count. Normally, such a shipment is destroyed. In this instance, the prawns were re-shipped to the Netherlands where they were irradiated. The irradiation was successful in killing the bacteria. Unfortunately, the irradiation left intact the toxins previously released by the bacteria while eliminating the visual and olfactory evidence customarily used by consumers to determine whether spoilage has begun. The tainted prawns were then returned to England. They were sold to consumers without warning of their potential for causing food poisoning.[14]

Environmental and Transportation Hazards

Experts[15] also suggest that food irradiation technology presents major environmental considerations similar to those posed by other nuclear processes but in some respects more severe because of the large number of activities involved, the high-level radioactive sources at each facility, and the lesser degree of regulatory control required. These include:

1. Increased transport and handling of high-level radioactive wastes on America's highways presenting numerous communities with the possibility of contamination in the event of an accident;

2. Increased sources of worker exposure to radioactive materials resulting in higher carcinogenic and/or mutagenic risk; (In 1977, an employee at a Radiation Technology, Inc. facility opened the door to the radiation chamber while the radiation source was exposed, receiving a dose of 222 rads, a significant sub-lethal dose.[16] An irradiation industry worker in Norway received a lethal exposure in a comparable accident.)

3. Potential for the accidental contamination of the immediate environment or of groundwater supplies; (There have been two known instances, one in 1976 at an Isomedix plant in Parsippany, N.J. and the other in 1982 at an International Nutronics plant in Dover, N.J., where radioactive water was poured into the local sewage system.)[17]

4. Possibility for the creation of potentially dangerous radiation-resistant mutant bacteria and viruses and their subsequent release into the environment; (In the book called Preservation of Food by Ionizing Radiation, Nicholas Grecz, Durwood Rowley and Akira Matsuyama

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* Testimony of Donald B. Louria, M.D. before the New Jersey State Assembly Health and Human Services Committee, June 15, 1987.

state that mutant salmonella bacteria have already developed in laboratories because of repeated irradiation.)[18]

5. Continued generation of radioactive wastes for which a secure isolation technology has yet to be developed;

6. Increased opportunity for major terrorist threat; (A terrorist can place a time bomb in a crate of food which will pass through the irradiation chamber. An explosion could breach the irradiation chamber allowing radioactive material to be scattered in the surrounding community.)[19]

7. Accidental explosions which could breach the irradiation chamber and release radioactive material. (Accidental explosions, fires or loss of protective water from the radioactive source material storage pool do occur and cannot be precluded. An unscheduled Nuclear Regulatory Commission [NRC] inspection on July 23 and 24, 1987 at a Precision Materials Co. irradiation facility uncovered "either a leak or 'serious evaporation' of water" in the storage pool in which cobalt-60 was stored.)[20]

No region of the country is immune to, or exempt from, the impacts of this technology and its products. Government plans call for the distribution of irradiated food nationwide, even worldwide. Under the Byproducts Utilization Program, the DOE is demonstrating mobile food irradiation facilities which would be used for freshly harvested produce in agricultural production areas. At the same time, large centralized facilities are proposed for operation in wholesale distribution centers within major metropolitan areas, as exemplified by the Port Authority proposal for Elizabeth, N.J., (now cancelled in response to information provided by Food and Water which resulted in heavy public opposition) and the more recent proposal of an international consortium, called Agrolife, S.A., to operate a facility in the port of Philadelphia.

Jacek S. Sivinski, Director of Radiation Technology Programs for CH2M Hill (a consultant firm to the DOE on the Byproducts Utilization Program), has stated that government plans call for the construction of up to one thousand food irradiation facilities across the country, in both urban and rural areas, each utilizing as much as one million to ten million curies* of radioactive materials.[21] By contrast, hospital medical irradiation facilities generally use no more than 1,000 curies of cobalt-60. Serious accidents have indirectly resulted from the mishandling of even those comparatively small quantities of radioactive materials.[22] Not only is the amount projected for use in just a few irradiation facilities more than the total amount of radioactive material currently in use in all hospital irradiation facilities throughout the country but, in the case of cesium-137, the radioactive material most likely to be used in the majority of food irradiation facilities, the amount to be used in a single irradiation facility represents 1,000 times the amount of cesium-137 released by a 20-kiloton nuclear bomb. It is within the range of the amount of cesium-137 estimated to have been released by the explosion of the Cherno-

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* A curie is a measure of radioactivity given off by an unstable element. One curie equals the amount of radioactivity associated with one gram of radium.

byl reactor.[23] Cesium-137 is among the most biologically hazardous of radioisotopes. A major accident at any one of these facilities could, therefore, result in significant long-lasting environmental contamination over a large area. This fact notwithstanding, the NRC is not requiring the filing of environmental impact statements on any aspect of this process.

Not least among the environmental hazards, some observers suggest, is that, with the creation of new companies as this multi-billion dollar "growth industry" gets under way, the likelihood is markedly increased that unscrupulous entrepreneurs will illegally and unsafely dispose of their radioactive wastes. "Midnight dumping" of hazardous wastes is well documented. Citizens familiar with the issue point out that some of the companies which will operate these facilities have already demonstrated a notable lack of concern about protecting the environment. For example, Radiation Technology, Inc. (RTI) of Rockaway, N.J., is licensed to carry out this technology but has an established record for flagrant violations of federal and state standards of environmental protection. This company has been cited by the Environmental Protection Agency (EPA) for illegal activities such as mixing radioactive waste with regular garbage.[24] Officials of another irradiation company, International Nutronics, Inc. of Dover, N.J., have also been indicted and convicted of illegal activities associated with a 1982 radioactive spill in which workers dumped radioactive water down a bathroom drain.[25] The company has since filed for bankruptcy. Precision Materials, Inc. of Mine Hill, N.J. was ordered by the NRC to close its facilities as a result of irregularities discovered during an NRC inspection. Future recurrence of safety violations or the deliberate radioactive contamination of the environment, as has happened at RTI and International Nutronics, is certainly possible, even likely.

DOE Sponsorship and Food Irradiation's Link to Nuclear Weapons Production and Nuclear Waste Disposal Programs

The U.S. Department of Energy (DOE) appears to be the prime government sponsor of food irradiation with an active Byproducts Utilization Program, the stated purpose of which is to demonstrate the efficacy of the process and to promote the use of a radioactive waste, cesium-137, as the irradiating source material.[26] DOE has reached agreement with several states (Iowa, Oklahoma, Florida, Alaska, Hawaii, Washington) to build demonstration irradiators for fresh produce. These irradiators will use cesium-137 obtained from the reprocessing of fuels from DOE plutonium production reactors. (This cesium is currently in storage at Hanford, Washington.)

A thriving food irradiation industry would benefit the nuclear arms program which the DOE oversees, by increasing the stockpile of plutonium which will be needed to carry out the Strategic Defense Initiative (Star Wars) and other nuclear weapons production programs.[27] If approximately 1,000 irradiation facilities are constructed, they would require at least one billion curies of radioactive isotope to operate. The isotope currently used in the irradiation process is cobalt-60 but only 10-20 million curies of cobalt-60 are produced per year. Worldwide cobalt-60 production capacity would not come close to meeting the isotope demand created by a flourishing food irradiation industry. The only radioactive isotope available in sufficient quantity to meet the potential demand of a food irradiation industry is

cesium-137. The DOE currently has on hand between 150-200 million curies of cesium-137, an amount which still leaves a shortage of some 800 million curies of radioactive isotope. According to Dr. Garth L. Tingey, Senior Research Scientist at Battelle Pacific Northwest Laboratories, the only possible source for this quantity of cesium-137 is spent nuclear reactor fuel, i.e. the high-level radioactive waste from commercial and military nuclear reactors from which could be obtained one to two billion curies of Cesium-137.[28]

Recovering cesium-137 from reactor fuel requires reprocessing of the fuel. Chemical reprocessing is a complex and highly dangerous process (considered the most environmentally hazardous step in the entire nuclear fuel cycle*) in which spent fuel is chemically treated for the purpose of separating and retrieving radioactive isotopes contained in the waste. This technology was halted in the late 1970's by Presidential order due to costs, environmental hazards, and, in particular, public concerns about the construction and proliferation of nuclear weapons utilizing the plutonium recovered from reprocessing of commercial waste. If reprocessing is begun anew, it is likely that the Barnwell reprocessing plant, already constructed for this purpose, will be reactivated, that reprocessing facilities at either the Hanford or Savannah River nuclear weapons plants will be modified, that a new reprocessing plant will be utilized, or all the above. Modifications of the Hanford and Savannah River facilities are indeed in the planning stages."[29] DOE officials have, furthermore, stated to Congressional committees this year that DOE has no objection to the private sector's reinitiation of chemical reprocessing of commercial spent fuel. The head of DOE's Office of Civilian Radioactive Waste Management, Benard Ruche, has stated that the major public benefit to be derived from reprocessing would be the recovery from spent fuel of cesium-137 for food irradiation.

Beyond the recovery of cesium-137, there is another benefit to be derived from reprocessing which is undoubtedly of interest to the DOE. Plutonium, in increasingly short supply for the military, would also be recovered if spent fuel were reprocessed.[30] Under current law, reprocessing for the explicit purpose of utilizing plutonium recovered from commercial spent fuel for nuclear weapons is forbidden by the Mitchell-Simpson-Hart Amendment to the Atomic Energy Act. It would also be contrary to strong public sentiment against the linking of military and civilian nuclear programs. However, recovering plutonium as a consequence of reprocessing for a publicly beneficial purpose, namely byproducts utilization for the purpose of food irradiation, is not banned and would create a benign, even altruistic link between the military and civilian programs. Plutonium so recovered could then be stored for future use even if it could not be used immediately because of the stipulations of the Mitchell-Simpson-Hart Amendment.[31]

If reprocessed, commercial spent fuel can yield a supply of some 75 metric tons of plutonium-239, enough plutonium to arm at least 20,000 nuclear warheads.[32] Some experts argue that this objective, the recovery of pluto-

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* The nuclear fuel cycle is defined as all activities involving nuclear materials beginning with the mining of uranium ore, through refining and enriching of the ore, through reactor fuel or weapons fabrication, use in reactors, reprocessing and ultimate isolation.

nium from reactor spent fuel, is the primary motivation behind DOE's push for the rapid commercialization of food irradiation. Among the experts who have examined DOE's role in the development of nuclear weapons in relationship with nuclear power and the disposal of high-level radioactive wastes are Dr. Thomas Cochran, staff scientist with the Natural Resources Defense Council, Dr. Richard Piccioni, radiation physicist with Accord Research and Educational Associates and member of the Board of Directors of Food and Water, Inc., and Robert Alvarez of the Environmental Policy Institute.

Another likely factor contributing to DOE's sponsorship of food irradiation may be its urgent need to find a solution to the politically explosive high-level radioactive waste disposal problem. Food irradiation offers a partial solution because it requires the recycling of the cesium portion of that waste to irradiate food. According to the DOE's Byproducts Utilization Program brochure, fully 55% of the total radioactivity in reprocessed military high-level radioactive waste currently in storage is cesium, for which DOE has no permanent waste disposal facilities. Cesium also comprises a substantial percentage of commercial radioactive waste. Food irradiation would serve the DOE by recycling cesium-137 from spent fuel and dispersing it to a thousand sites around the country.

Corroborating the concern that cesium-137 from commercial high-level radioactive waste may be recycled as a valuable "source material" is the fact that the NRC, in February 1986, proposed to redefine high level radioactive waste in a manner that could exclude the comparatively short-lived cesium-137 (30 year half-life and 300-600 year hazardous lifespan) from the Federal Deep Geologic Repository (i.e. permanent burial facility) for which DOE is responsible.* NRC argued that only very long-lived radioactive waste (like technetium-99 with a half-life of 212,000 years) would require permanent geologic disposal. Under federal law and NRC regulations, cesium-137 is considered a short-lived, although biologically hazardous, radioactive isotope. If it is recycled to commercial food irradiators, the wastes from those facilities, if properly diluted or mixed with non-radioactive materials, could be declared to be "low-level" wastes. Under the 1980 Federal Low-Level Radioactive Waste Policy Act, each state is responsible for the disposal of the wastes which the NRC defines as low-level. Thus, by promoting the use of cesium-137 for food irradiation, DOE may be able to divest itself of the responsibility for the disposal of cesium-137 as high-level waste. We have found that most states are entirely unaware of this proposed change and its significance. In light of the potential benefits which would accrue to the DOE from a thriving food irradiation industry which utilized cesium-137, it is not surprising to learn that in the case of the Florida demonstration irradiator, DOE recently offered to provide free cesium-137 and is making funding contingent on the use of cesium-137 instead of cobalt-60. (For further information on why the DOE supports food irradiation, see Appendix C.)

Food irradiation is not confined to the U.S. The International Atomic Energy Agency, the Food and Agriculture Organization, and the World Health

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* In contrast to cesium-137, cobalt-60 has a half-life of 5 years and iodine-131 has a half-life of 8 days. A radioactive isotope is generally considered hazardous for a period of 10-20 times the length of the half-life.

Organization have been intensifying international promotional efforts and making plans for broader commercial application of ionizing radiation technology. Since the FDA's recent approval of irradiated produce and pork, the U.S. effort has been matched by attempts to promote food irradiation in the Third World. Proponents concede that success in the Third World depends on consumer acceptance and success in developed countries. This being the case, there is no indication or likelihood that DOE will slow its plans to transfer radioactive wastes into the agricultural and food processing sector, and thereby rid itself of part of the burden of radioactive waste disposal.

Alternatives to Food Irradiation

Safe and proven alternatives for all the stated purposes of food irradiation already exist and are now in use: fruit fly sterilization, cold storage, single and double hot water dip, detection of larval infestation with acoustic devices and mechanical removal of larvae, microwaves, and infrared heat treatment, among others.[33] Even enthusiastic supporters of irradiation in the agriculture industry admit that irradiation of produce and grains will not replace all fumigants and pesticides. Furthermore, irradiation is a post-harvest means of disinfesting foods. The usual pre-harvest herbicides, fungicides, and insecticides, some having persistent residues, will still be applied to many commercial crops.

THE LABELING ISSUE

The food irradiation industry has opposed government imposition of any labeling requirements whatsoever on irradiated foods, perhaps believing that consumers, given accurate information and an option, might resist purchasing such foods. Having failed to eliminate the labeling requirement, the industry lobbied FDA to have such foods labeled as "picowaved" rather than "irradiated". The "picowaved" terminology was rejected by the FDA, but a questionable symbol was approved instead to identify irradiated whole foods: a "radura", a schematic of which is shown below. It closely resembles a flower or the EPA logo; it is not a familiar or commonly used radiation warning symbol. No label or notice to consumers is required by FDA for processed or prepared foods containing irradiated ingredients or for any restaurant food or school cafeteria food.[34] Furthermore, the FDA specifies in its 1986 ruling that the written warning "treated with ionizing radiation," will be dropped entirely after April, 1988.[35]

More than one year of the original two year labeling period has already passed. Few consumers have ever seen the written warning because irradiated foods have not yet reached the market except for two isolated and brief market tests. This fact may be related to the industry's acknowledged need for several years to gear up for production. This lead-time effectively ensures that by the time irradiated whole foods reach the market the written warning will no longer be required. An inadequately educated consumer will thus have no means of identifying irradiated food in the market or in restaurants.

ENDNOTES

1. Based on these consequences, food irradiation is hailed by its proponents as an alternative to EDB and other post-harvest fumigants and preservatives now known to be carcinogenic.

2. Donald Louria, M.D., Chairman, Department of Preventive Medicine and Community Health, New Jersey University of Medicine and Dentistry.
George Tritsch, Ph.D., Cancer Research Scientist, Roswell Park Memorial Institute, New York State Department of Health.
Steve Meshnick, M.D., Ph.D., Associate Medical Professor, The City of New York Medical School.
Jonathan B. Ward, Jr., Ph.D., the University of Texas Medical Branch.
Noel F. Sommer, Ph.D., University of California, Davis.
Samuel S. Epstein, M.D., Professor of Occupational and Environmental Medicine, the University of Illinois at Chicago.
Richard Piccioni, Ph.D., Senior Staff Scientist, Accord Research Associates.
Dr. Jozsef Barna, Central Food Research Institute, Budapest, Hungary.
Dr. S. G. Srikantia, Honorary Professor of Foods and Nutrition, Mysore University, India.
John Gofman, M.D., Ph.D., Professor Emeritus of Medical Physics at the University of California at Berkeley.
Rosalie Bertell, Ph.D., President of Board and Director of Research, International Institute of Concern for Public Health

3. The ten potential hazards enumerated herein are a sampling of the potential hazards associated with food irradiation. We are providing this short list to give the reader a sense of the range of research into and the consequences which may result from the consumption of irradiated foods. For a more complete list, please refer to Appendix A. The document entitled "Food Irradiation, Excerpts of Testimony....by Richard Piccioni" lists numerous studies of food irradiation all of which indicate potential hazards associated with the consumption of irradiated foods. Many of these studies were not even considered by the FDA in its Final Rule on food irradiation. Dr. Piccioni has stated that this list results from only a cursory review of the literature. For further discussion of the potential health hazards of food irradiation, see Appendix A.

4. Wierbicki et al., Ionizing Energy in Food Processing and Pest control, Part 1, Council for Agricultural Science and Technology, July, 1986.

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Nawar, W. W., Reaction Mechanisms in the Radiolysis of Fats: A Review, J. Agric. Food Chem., 26:21-25, 1978.

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5. Schubert, J., Watson, J.A., White, E.R., "Hydroxyalkyl peroxides and the toxicity of irradiated sucrose," Int. J. Radiat. Biol., 13:484-489, 1967.

Brooks, B.R., Klamerth, O.L. "Interaction of DNA with Bifunctional Aldehydes," European J. Biochem., 5:178-182, 1968.

Simic, M.G., Jovanovich, S.V. "Free Radical Mechanisms of DNA Base Damage," Basic Life Sci., 38:39-49, 1986.

6. Hobbs, G. and J.M. Sherman, "present Status of Radiation Preservation of Fish and Fishery Products in Europe," in Kreuzer, Ed. Freezing and Irradiation of Fish, Fishing News Books LImited: London, England 488 (1969).

Pim, Linda "Preserving Food the Radiation Way," 6 Probe Post, (3), 10, Dec., 1983.

7. Bullerman, et. al., "Use of Gamma Irradiation to Prevent Aflatoxin Production in Bread," J. of Food Science, 38:1238, 1973.

8. Federal Register, April 18, 1986. 51: 13376-13399.

9. Hollowell Jr., J.G., Littlefield, L.G., "Chromosome Aberrations Induced by Plasma from Irradiated Patients, "J. S. Car. Med. Assoc., 63:437, 442, 1967.

Hollowell Jr., J.G., Littlefield, L.G., "Chromosome Damage Induced by Plasma of X-rayed Patients: An Indirect Effect by X-Ray," Proc. Soc. Exp. Biol. Med., 129:240-244, 1968.

10. Ivanov, A.E., and Levina, A.I., "Pathomorphological Changes in the Testes of Rats Fed on Products Irradiated with Gamma Rays," Biull. Eksp. Biol. Med., 91(2):233-236, 1981.

11. Levina, A.I., and Ivanov, A. E., "Renal Pathomorphology of Rats Fed Irradiated Food Products Over a Long Period," Biull. Eksp. Biol. Med., 35:236-238, 1978.

12. Kuzdaz, C. D., Thomson, G., and Lusskin, R.M., "Final Report: Application of the Ames Mutagenicity Test for the Assessment of Mutagenic Activity in Thermal Processed, Frozen, Electron Irradiated, and Gamma Irradiated Chicken," Raltech Scientific Services, St. Louis, MO. Available from National Technical Information Service, Springfield, VA. PB84-187053, 1980.

13. Bhaskaram, C., Sadasivan, G., "Effects of Feeding Irradiated Wheat to Malnourished Children," Am. J. Clin. Nutr., 28:130-135, 1975.

Penner, N.W. "Chromosome Studies on Bone Marrow Cells of Chinese Hamsters Fed a Radiosterilized Diet," Toxicology, 8(2):213-222, 1977.

14. (London) Daily Mail, Monday, March 3, 1986

15. Robert Alvarez, Radiation and Health Project Director, Environmental Policy Institute.

Richard Piccioni, Ph.D., Senior Staff Scientist, Accord Research Associates.

Kathleen M. Tucker, Esq., Executive Director, Health and Energy Institute.

Judith Johnsrud, Ph.D., Research Director, Food and Water, Inc.

16. Barry, J., "Radioactive Responsibility," New Jersey Daily Record, October 2, 1977.

Federal Register, June 30, 1986, 51:23612-23613

17. Dupin, C., "Probe Asked at Irradiation Plant, Isomedix Decontamination Questioned", New Jersey Daily Record, May 3, 1981.

Osby, L., "Nutronics Denies Cover-up of Leak", New Jersey Daily Record, October 15, 1983.

Federico, C., United Press International, "Feds: Dover Radiation Spill Concealed," North Jersey Advance, June 25, 1986.

18. Grecz, N., Rowley, D., and Matsuyama, A., "The Action of Radiation on Bacteria and Viruses," in Josephson, E. & Peterson, M.S., Eds. Preservation of Food by Ionizing Radiation, Vol. II, CRC Press: Boca Raton, Florida, 167 (1983).

19. The point is that explosions, whether accidental or deliberate, can breach the irradiation chamber thereby releasing highly radioactive material in the surrounding community. Dr. Richard Piccioni maintains that a food irradiation chamber is constructed in such a way that in the event of an explosion the chamber could act as a gun barrel and propel the radioactive material over extremely large areas.

20. Ragonese, Lawrence, "Possible Leak Probed at Mine Hill Cobalt Unit", The Sunday Star-Ledger, August 23, 1987.

21. Jacek S. Sivinski has made this statement at various conferences since the mid-70's.

22. In 1983, junkyard workers in Juarez, Mexico, unwittingly opened a stolen cancer therapy device and spilled the radioactive "source" material - cobalt 60. At least 200 people received significant doses of radiation.

Marshall, Eliot, "Juarez: An Unprecedented Radiation Accident", Science, 223: 1152-1154, March 1984.

23. According to Atomic Energy of Canada, Ltd., (the producers of 30% of the worlds supply of cobalt-60) there are approximately 80 million curies of cobalt-60 in use worldwide. Cesium-137 is about one fifth as powerful a gamma irradiator as cobalt-60. Therefore, much more cesium-137 is required for the operation of food irradiation facilities than cobalt-60. The construction of one thousand facilities would represent a quantum leap in the worldwide use of radioactive isotopes for irradiation purposes.

24. Contrary to what some believe, Radiation Technology, Inc. has not gone out of business. Although its license to operate was suspended by the Nuclear Regulatory Commission on two separate occasions during 1986, the NRC lifted the suspension on August 22, 1986. As a precondition to licensure reinstatement, RTI's Chief Executive Officer, Dr. Martin Welt, was barred from serving RTI in any capacity, even as a consultant.

25. United Press International, "Executive Convicted in Radiation Spill", North Jersey Advance, October 30, 1986.

26. One of the stated purposes of the Byproducts Utilization Program is to demonstrate the economic feasibility of food irradiation. "In order to assure that the promise of food irradiation technology is realized, the Department of Energy is investigating options for increasing the supplies of radiation sources." Technology Update and Future Initiative, Brochure Prepared by CH2M Hill, 1985. (See Appendix B.)

"The strategy being pursued by the Department of Energy's Byproducts Utilization Program is designed to transfer federally developed cesium-137 irradiation technology to the commercial sector as rapidly and successfully as possible." (Testimony of W.C. Remini and J.J. Jicha, Jr., submitted by F.C. Gilbert, Deputy Assistant Secretary for Nuclear Materials, United States Department of Energy, before the Procurement and Military Nuclear Systems Subcommittee of the Committee on Armed Services, House of Representatives, 98th Congress, First Session, March 1 & 2, 1983.)

27. Gilbert, F.C., Remini, W.C., Jicha, J.J. "A Plan for the Recovery and Utilization of Nuclear Byproducts from the Defense Nuclear Fuel Cycle," Testimony before the Procurement and Military Nuclear Systems Subcommittee of the Committee on Armed Services, US House of Representatives, March 1 and 2, 1983.

Tingey, G.L. "Technology of Food Irradiation," Testimony before the Subcommittee on Energy Research and Production, Committee on Science and Technology, US House of Representatives, July 26, 1984.

28. Tingey, G.L., "Technology of Food Irradiation", Testimony before the Subcommittee on Energy Research and Production, Committee on Science and Technology, US House of Representatives, July 26, 1984.

29. Dr. Richard Piccioni, Food Irradiation - A Pretext for Reprocessing of Commercial Spent Fuel and Expanded Nuclear Weapons Production, Food and Water, Inc. Jan. 1987.

30. Wald, M., "Senate Panel Blocks Funds for Weapon Reactor", New York Times, May 1, 1987.

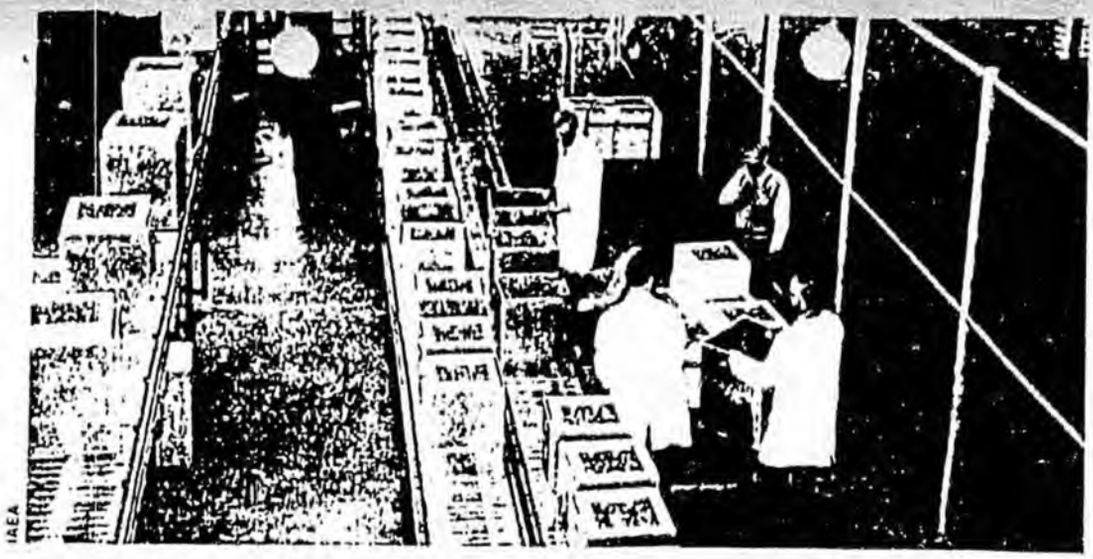
31. And, while chemical reprocessing of commercial waste for weapons-grade plutonium production has been a technically difficult process, recently developed laser technology for isotopic separation, a technology in which the DOE has made a massive research and development commitment, promises to make feasible the purification of weapons-grade plutonium from the plutonium derived from reprocessing of commercial spent fuel.

32. These facts were provided by Dr. Richard Piccioni.

33. Health Research Group, Comments on FDA Docket 81N-0004, April 12, 1984.

34. Federal Register, April 18, 1986, 51 FR 13387-13391.

35. Ibid.



Commercial irradiation of strawberries. The bugs may not be killed and carcinogenic substances are created as an additional menace.

Food Irradiation: Contaminating our Food

by Richard Piccioni

Food irradiation has long been promoted by the nuclear industry as an effective and safe means of preserving food at minimum risk to the public. In fact, irradiation not only depletes the nutritional value of food but it also masks the bacterial contamination of rotting food. Moreover, irradiation exposes the consumer to a whole new range of carcinogens. Indeed, food irradiation should be seen for what it is: an unscrupulous attempt to find a commercial use for nuclear wastes.

In the last three years, the approval and implementation of food irradiation has created a growing concern amongst both the scientific community and the general public. In the United States, the debate centres around a series of approvals recently passed by the Food and Drug Administration (FDA) for irradiation of all grains, fruits, vegetables, pork, and spices at doses ranging from 10,000 to 3 million rads. Approval is now pending for the irradiation of poultry at 300,000 rads to protect against bacterial contamination. A second federal agency, the Department of Energy (DOE), recently received funding to promote food irradiation technology and to continue research and development in this area. At the same time, the Delaney Amendment, which prohibits the addition of carcinogenic substances to processed foods, has recently been upheld. This amendment represents a serious legal challenge to the FDA's decisions on food irradiation.

A wide-scale food irradiation programme in the US and abroad would have an adverse impact on public health in a number of ways:

- Through the consumption of carcinogenic substances generated in irradiated foods:
- Through the use of irradiation to mask bacteriological contamination of spoiled food:
- Through the replacement of fresh foods with nutritionally depleted irradiated foods:
- Through accidents involving leaks or the mishandling of the multi-megacurie radiation sources used in food irradiation plants:
- And, finally, through the environmental damage attending the operation of nuclear reactors and the reprocessing of spent nuclear fuel to provide the required radioactive isotopes for the food irradiation industry.

The food irradiation market is potentially enormous; irradiation of a substantial fraction of the grain and poultry consumed in the US would require the operation of hundreds of irradiation facilities.[1] Large potential markets exist in the treatment of foods and spices imported from foreign countries with lower standards of food hygiene.[2] Currently, the DOE is planning the construction of five demonstration plants, fuelled with radioactive caesium-137 generated during the production of nuclear weapons. If the plants go ahead, food irradiation would thus become a major (and dangerous) route by which military nuclear wastes are dispersed throughout the environment. A number of private companies which now irradiate medical equipment and other non-food items, using caesium-137 or cobalt-60, are actively seeking to expand their product line to include foods such as grains, poultry, citrus fruits, and berries.

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During radiation treatment, foods are exposed to a source of gamma-emitting cobalt-60 or caesium-137. As the radiation penetrates the food, part of the energy contained in each gamma photon is dissipatedd by the ionizing of water, protein, carbohydrate, fat, nucleic acids, vitamins, minerals, and other food components. The ionizing of these substances causes them to undergo drastic and complex chemical changes, resulting in a residue of chemically transformed material. This residue is referred to as a 'radiolytic product'. The complexity of food chemistry and the limitations of chemical analysis make it impossible to identify all radiolytic products. This, together with experimental results, causes concern that the diverse mixture of chemicals generated in irradiated food contains substances that are capable of causing cancer or genetic damage.

Examination of the scientific literature reveals a large number of research reports which attest to the presence of carcinogenic or mutagenic activity in irradiated foods and food components. Table I gives details of the diverse effects which have been observed and reported. One series of papers documents the mutagenicity of irradiated solutions of ribose, deoxyribose, and thymidine, all widespread constituents of food.[4,5] In work by several investigators (*see* Table I), an increased frequency of lethal sex-linked recessive mutations was observed in *Drosophila melanogaster* cultured on an irradiated medium.[6,7,8] Multiple effects have been reported in mice, rats, and hamsters fed an irradiated diet, including lethal mutations in developing germ cells, reduced sperm counts, and aneuploidy and chromosome damage in bone marrow cells (*see* Table I). Irradiated sucrose solutions have produced chromosome breaks in cultured human lymphocytes.[9] A series of experiments, using mice, rats and monkeys confirms a finding first made in a study of malnourished children[10] that a diet containing freshly irradiated wheat increased the incidence of polyploidy in peripheral blood lymphocytes.[11,12,13,14]

The majority of these studies were carried out without any attempt to determine mutagenic activity; often irradiated material was only a small component of an otherwise non-irradiated [illegible] the more alarming.

A number of workers has been able to analyse irradiated foods and food components chemically and to identify known carcinogenic and mutagenic compounds (*see* Table II). In particular, the radiolytic generation of such known mutagens as formaldehyde, formic acid, glyoxal, malondialdehyde, lipid peroxides, and quinones, is well-documented in the scientific literature (*see* references in Table II). Experiments performed by the US Army attest to the presence of benzene, a known carcinogen, in cooked, irradiated beef at levels over seven times higher than those found in cooked, non-irradiated controls.[15] One study relevant to the proposed irradiation of fish showed a synergistic effect in which lipid peroxide intermediates, formed on irradiation of unsaturated fatty acid preparations, increased the rate of oxidation of benzo(a)pyrene (an environmental carcinogen precursor widely distributed in many foods) to its active carcinogenic form.[16]

Inadequate Testing

Nonetheless, proponents of food irradiation continue to argue that safety studies show no evidence of adverse effects, other than vitamin depletion at very high doses.[17] The FDA has arbitrarily labelled as 'remote' the possibility that any radiolytic products are carcinogenic, and has granted permission to irradiate broad categories of foods, thereby eliminating the requirement for carcinogenicity testing of any specific food items.[18] The FDA has also declared an arbitrary dose of 100,000 rads to be safe for fruits and vegetables. The proposed dose for poultry is three times higher, yet the FDA has not sought evidence from would-be irradiators to determine whether or not the irradiated carcasses are carcinogenic.[19]

This position is out of line both with the FDA's legal obligation to protect the health and safety of the American people, and with the agency's usual approach to the regulation of carcinogenic substances in foods, drugs and cosmetics. Companies approaching the FDA for permission to market food additives, for example, are required to provide estimates, derived from animal studies, of the maximum carcinogenic potential of their product. The studies involve animals being observed over significant periods and tested with exaggeration factors of 1,000 or more. This approach has

Table I BROADSAYS ON IRRADIATED ORGANIC MEDIA AND FOODS SHOWING POSITIVE MUTAGENICITY, CHROMOSOMAL DAMAGE, TERATOGENICITY OR CYOTOXICITY

author(s)	date	irradiated material	observation	observed in
[illegible]	1961	plant leaves	chromosomal damage	plant embryos
[illegible]	1962	potato mash	chromosomal damage	barley embryos
[illegible]	1963	plant leaves	mutagenicity of extracts	plant cells
[illegible]	1963	culture medium	mutagenicity	Drosophila
[illegible]	1963	potato mash	developmental abnormalities	barley embryos
[illegible]	1964	culture medium	cytotoxicity	bacteria
[illegible]	1965	glucose, fructose	cytotoxicity	human & mouse cells
[illegible]	1965	culture medium	probable mutagenicity	bacteria
[illegible]	1965	glucose, milk sucrose	chromosomal damage	carrot explants
[illegible]	1965	nucleic acids	mutagenicity	Drosophila
[illegible]	1965	culture medium	mutagenicity	Drosophila
[illegible]	1966	culture medium	mutagenicity	bacteria
[illegible]	1966	sucrose	chromosomal damage	human lymphocytes
[illegible]	1966	glucose	cytotoxicity	mouse fibroblasts
[illegible]	1967	plasma	chromosomal damage	human lymphocytes
[illegible]	1967	glucose	chromosomal damage	onion roots
[illegible]	1967	nucleic acids	mutagenicity	Drosophila
[illegible]	1967	culture medium	mutagenicity	Drosophila
[illegible]	1967	sucrose	cytotoxicity	bacteria
[illegible]	1967	sucrose	cytotoxicity	carrot explants
[illegible]	1968	plasma	chromosomal damage	human leucocytes
[illegible]	1968	wheat endosperm	mutagenicity	wheat
[illegible]	1969	sucrose	developmental abnormalities	plant root cells
[illegible]	1969	culture medium	mutagenicity	bacteria
[illegible]	1970	laboratory diet	preimplantation death	mouse
[illegible]	1971	various sugars	cytotoxicity	bacteria
[illegible]	1972	potatoes	mutagenicity of extracts	mouse (sperm cells)
[illegible]	1973	wheat	aneuploidy	malnourished children
[illegible]	1973	wheat	chromosomal damage	rat (bone marrow)

author(s)	date	irradiated material	observation	observed in
Vijayalaxmi	1975	wheat	polyploidy	rat (bone marrow)
Vijayalaxmi	1976	wheat	mutagenicity	mouse
Vijayalaxmi	1976	wheat	sperm count reduction	mouse
Vijayalaxmi	1976	wheat	polyploidy	mouse (bone marrow)
Vijayalaxmi	1976	wheat	aneuploidy	mouse (sperm cells)
Vijayalaxmi & Rao	1976	wheat	mutagenicity	rat
Vijayalaxmi & Rao	1976	wheat	sperm count reduction	rat
Aiyar & Subba Rao	1977	various sugars	mutagenicity	bacteria
RAU (AEA, WHO)	1977	potatoes	mutagenicity of extracts	mouse
Hennet	1977	laboratory diet	polyploidy	hamster
Levina & Vanov	1978	laboratory diet	autoimmune disease	rat
Vijayalaxmi	1978	wheat	low antibody levels	rat
Vijayalaxmi	1978	wheat	polyploidy, other effects	monkey
Ahmed et al	1980	nucleic acids	mutagenicity	bacteria
Vanov & Levina	1981	laboratory diet	testicular abnormalities	rat
Ahmed et al	1981	nucleosides	mutagenicity	bacteria
Ahmed & Nalubola	1981	deoxyribose	chromosomal aberrations	hamster cells

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formed the basis on which thousands of compounds have been approved or banned.[20]

In the case of food irradiation, a special problem exists. Because radiolytic products do not represent a defined group of chemical compounds, they cannot be tested individually at high concentrations. The alternative, feeding animals thousands of times as much food as they would otherwise eat, or irradiating the food at doses thousands of times higher than is proposed, is not possible. There is no simple way to achieve the dose exaggeration factor required to protect the health of large populations consuming irradiated foods. As long ago as 1967, the FDA itself acknowledged the special difficulties of ascertaining the safety of irradiated food,[21] and, in 1968, the agency rescinded its earlier approval of food irradiation after serious questions arose regarding the conduct and interpretation of the experiments on which the FDA had relied. Originally, the FDA claimed that early experiments showed irradiated food not to be carcinogenic. In fact, these experiments showed a significant increase in tumours in animals fed irradiated food.[22]

In 1979, after over a decade of controversy, the FDA set up the Bureau of Food's Irradiated Food Committee (BFIFC) to develop criteria for establishing the safety of irradiated foods.[23] This group developed a theoretical model to predict levels of what they called 'unique radiolytic products' (URPs). It was the assertion of the BFIFC that only URPs – that is, substances found to be unique to irradiated foods – were of regulatory concern. To take an actual example, irradiation of beef generates the carcinogen benzene as a radiolytic product; however, because charcoal broiling also generates benzene, benzene will not qualify as a URP and is excluded from further consideration as a hazard accompanying radiation processing.

Arbitrary Limits

Lacking meaningful toxicological data, the BFIFC made a theoretical estimate of the possible risks of eating irradiated foods. At a dose of 100 rads [illegible] BFIFC predicted that some 50 parts per million (ppm) of the radiolytic product would be formed, and that 10 per cent of this could be unique to radiation processing, in other words, food treated with 100,000 rads would contain at most 3 ppm of URPs. The committee then made an extraordinary leap of faith: without any experimental evidence, they used their hypothetical arguments to lay down regulations defining actual use. Moreover, they stated that the 3 ppm of chemically and toxicologically undefined substances, formed in food as a result of radiation processing, would be "similar to natural food components" and safe to include as a substantial part of the diet of some 240 million Americans. Given the possible consumption of many kilograms of irradiated food per person per year by virtually the entire US population, the acceptance of the 3 ppm level is an extreme departure from known precedents for regulating numerous food substances hazardous at far lower concentrations.[24]

Currently, the FDA has adopted the BFIFC's recommendation to permit the irradiation of a wide range of food at up to 100,000 rads, without the necessity of actual toxicological testing. The BFIFC has also recommended that spices, because of their smaller contribution to the total diet, be exempted from testing at up to 3 million rads.[23] The FDA undertook a literature survey before adopting the BFIFC's theoretical approach. Of over 400 studies reviewed, only 69 satisfied the criteria for technical acceptability. Of the 69 acceptable studies, 32 reported adverse effects from feeding irradiated foods, while 37 "appeared to support safety".[25] When further selection criteria were applied, only five studies remained (roughly one per cent of published reports). These five studies reported the absence of statistically significant increases in tumours in numbers of animals fed whole irradiated foods. In none of the studies was there a significant dose exaggeration factor, leading the FDA to report:

> "... the extreme dilution of the potentially toxic unique radiolytic products in proportion to the high levels of the irradiated foods themselves, would result in an inability, as in traditional toxicology testing, to exaggerate the dose of the

Table II. IDENTIFICATION OF MUTAGENIC, CARCINOGENIC OR CYTOTOXIC RADIOLYTIC PRODUCTS IN IRRADIATED ORGANIC MEDIA OR FOOD

author(s)	date	irradiated material	radiolytic product	comments
Phillips et al	1958	dextrose fructose	glyoxal formaldehyde	mutagenic mutagenic
Kuzin	1963	plant tissues	organic peroxides orthoquinones	mutagenic carcinogenic
Frey & Pollard	1966	minimal cell medium	hydrogen peroxide	mutagenic generates secondary mutagens
Kuzin	1966	plants rat thymus tyrosine	orthoquinones orthophenols	carcinogenic carcinogenic
Schubert et al	1967	sucrose	hydroxyalkyl peroxides glyoxal	mutagenic mutagenic
Steward et al	1967	sucrose	formic acid	mutagenic
Brooks & Kuhlerth	1968	glucose	glyoxal malonyldialdehyde	mutagenic binds to DNA mutagenic binds to DNA
Chopra	1969	glucose	organic peroxides	mutagenic
Schubert & Sanders	1971	D glucose D fructose D mannose D rhamnose D galactose D lucose	alpha beta unsaturated carbonyl sugars	cytotoxic toxicity increased upon heating irradiated solution
El Zeany	1980	buffalo meat	peroxides carbonyl compounds	mutagenic cytotoxic
Wagner et al	1981	fatty D ribose D ribose	hydrogen peroxide malonaldehyde carbonyl compounds	mutagenic mutagenic cytotoxic
Grant & Wills	1986	benzo(a)pyrene starch & derivatives	benzo(a)pyrene (oxidized) peroxides malonaldehyde lipid peroxides	carcinogenic carcinogenic mutagenic mutagenic

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test compound. For these reasons it would be difficult to devise a traditional toxicology study of sufficient sensitivity to provide assurances of safety for the population exposed to unique radiolytic products from irradiated foods constituting a major portion of the total diet."[25]

In spite of this, the FDA concluded that "studies with irradiated foods do not appear to show adverse toxicological effects", and it reverted to the same theoretical '3 ppm' argument which it had been supposed to replace with toxicological data.[26]

There is an alternative approach to the carcinogenicity testing of irradiated foods; namely, to prepare concentrated extracts of foods after radiation exposure, and to compare the biological activity of such concentrates with similar preparations for non-irradiated controls. In a letter to *Science*, published in 1984, Drs. Samuel Epstein and John Gofman called for caution over the approval of food irradiation, and specifically suggested the testing of concentrated extracts of irradiated foods, using methodologies that have been applied elsewhere in the analysis of naturally occurring carcinogens and mutagens.[27] A small amount of work of this kind has been done, indicating the occurrence of dominant lethal mutations in the spermatozoids, spermatids, and spermatocytes of mice fed an alcohol extract of gamma-irradiated potatoes, as compared to extracts of non-irradiated controls.[28] The effect was not reproduced, however, by a Japanese group.[29] A report on food irradiation by a joint committee of the Food and Agricultural Organization (FAO), the International Atomic Energy Agency (IAEA), and the World Health Organization (WHO), notes, without citing references, that mutagenic activity has been detected in alcohol extracts of irradiated wheat.[10] Significantly, the effect, which was described as "worthy of further study" is not mentioned in the joint committee's 1981 report.[11]

Nuclear Waste and Irradiated Foods

Worldwide, there are currently some 132 large irradiation facilities in operation of a size appropriate for food irradiation; 50 of these are in the US. With minor exceptions, these facilities process exclusively non-food items, primarily disposable medical equipment.[12] If dedicated to food irradiation, each of these large irradiation plants could process approximately 150,000 metric tons of food a year at a dose of 100,000 rads.[1] Since the average North American consumes roughly 800 kg of food annually (directly or in the form of feed fed to animals), irradiation of the US food supply at 100,000 rads would require the operation of over 1,200 irradiation plants.[13] Higher doses would require more plants. For example, consumption of poultry (primarily chicken) is expected to rise to 8.6 million metric tons per year in 1987.[14] A total of 170 plants would be required to irradiate this commodity alone at the dose level laid down by the USDA (300,000 rads). Thus, in order to implement the irradiation of food on a wide scale, the number of large irradiation facilities in operation will have to increase dramatically.

Large irradiation facilities (of the type assumed in the preceding calculations) contain one million curies of gamma-emitting cobalt-60 or 4-6 million curies of caesium-137.To compensate for radioactive decay, either type of plant will have to be resupplied with approximately 120,000 curies each year.Given the number of facilities required, the quantity of installed radioactive material which would be needed for extensive food irradiation, the US government has created a market for enormous quantities of radioactive material.

Significantly, the only isotope which is available in sufficient quantities for widespread food irradiation is caesium-137, a waste product of nuclear weapons production and of the civil nuclear power programme. The US Department of Energy and its predecessors have long promoted the use of caesium-137 'byproduct material' in the treatment of foods.[16] A statement from congressional testimony submitted by the DOE in 1983 provides an illuminating glimpse into the nature of the DOE's interest in food irradiation:

> "The strategy being pursued by DOE's Byproducts Utilization Program is designed to transfer federally developed caesium-137 irradiation technology to the commercial sector as rapidly and successfully as possible.The measure of success will be the degree to which this technology is implemented industrially and the subsequent demand created for Cs-137".[17]

With the DOE as supplier, food irradiation has the purpose of ridding the military of vast amounts of its nuclear wastes. The DOE has made immediately available 77 megacuries of caesium-137, obtained from military plutonium production reactors at the Hanford facility in Richland, Washington. This source of the isotope will be immediately used for the irradiation of agricultural commodities in the five prototype demonstration facilities to be constructed in the next few years. This material is only a small portion of the inventory of caesium-137 at the DOE's Hanford and Savannah River weapons plants.[18]

The quantity of caesium-137 which has been and will be produced in commercial nuclear power reactors dwarfs even the

of caesium-137 produced in commercial US reactors amounted to some 1,100 megacuries by the e[illegible] 1985, with an annual production rate of approximately 200 megacuries per year.[39,40] This would be sufficient to fuel 540 food irradiation plants with 5 megacuries of caesium-137 in each. Congressional testimony presented by DOE officials in 1984 indicated that the DOE is interested in using caesium-137 obtained from reprocessed spent fuel from civilian reactors for food irradiation.[41] A widely circulated brochure, produced by CH2M-Hill, a major DOE contractor, presents commercial reprocessing of spent fuel as virtually the only means of supplying sufficient radioactive material to implement food irradiation on a large scale.[42]

In order to obtain caesium-137 from spent commercial reactor fuel, the fuel must first be reprocessed. Although the DOE's Barnwell facility in South Carolina is complete, no facilities are yet in operation in the US for reprocessing spent commercial fuel. Reprocessing is being carried out in England at the Sellafield facility and in France at Cap La Hague. Work has been underway for several years to modify the existing chemicals separations facility[43] at Hanford to accommodate high burn-up, zirconium-clad fuels, which would include those obtained from commercial reactors. The programme is currently on hold because of a shortage of funds. However, the DOE is apparently considering using the existing submarine fuel reprocessing facilities at Idaho National Engineering Laboratory (INEL).[44]

The DOE does not advertise its interest in commercial spent fuel reprocessing, probably because of the 1982 Mitchell-Hart-Simpson Amendment to the 1954 Atomic Energy Act, which specifically prohibits plutonium obtained from the reprocessing of spent fuel from civil reactors being used in nuclear weapons. This amendment, which was actively opposed by the DOE at the time of its enactment[45] contains a loophole in an exclusion clause permitting weapons use of civil plutonium "in case of national emergency". Thus the future of plutonium from commercial spent fuel has been kept open. The DOE continues the construction of its laser isotope separation facility at INEL which would enable DOE to make weapons grade plutonium from commercial reactor waste.

Pesticide replacement

In the absence of quantitative studies to estimate the carcinogenic risk posed by consuming irradiated foods, there is no basis to the claim that food irradiation could replace the use of carcinogenic pesticides as a means of food preservation. In 1987, the National Academy of Sciences identified 23 pesticides which together were held responsible for the vast majority of the total carcinogenic risk from pesticide residues in the US food supply.[20] Food irradiation would not eliminate these pesticides since most are herbicides, insecticides, or fungicides applied in the field to prevent pre-harvest losses.[46] In fact, since irradiated products are more susceptible to infection by moulds and fungi,[47,48] irradiation may well increase the need for post-harvest fungicides on fruits and vegetables.

Pathogens in Poultry

The highly automated and poorly regulated nature of many of the poultry production plants in the US has led to the increased danger of widespread contamination of supermarket chicken

recent studies of the poultry industry in the US, the National Academy of Sc[illegible]es (NAS) estimated the health effects of the bacterial contamination of chicken carcasses during slaughter. The NAS committee called for the upgrading of hygienic standards in slaughterhouses, and recommended the setting up of a comprehensive quality assurance programme with improved methods of monitoring compliance by poultry producers.[49] These recommendations are in line with those of other critics of the poultry industry, who see the current problem of bacterial contamination as the result both of regulatory lassitude on the part of the US Department of Agriculture and of the drive to increase production on the part of the poultry producers. Reform of the industry is the subject of pending federal legislation.

Hazards of Food Irradiation Facilities

A large food irradiation plant contains roughly 100 times as much radioactivity as a typical cobalt-60 source used in hospital cancer therapy. The inventory of caesium-137 present in a large irradiator is comparable to that in a 1000 megawatt nuclear power reactor.[50] Furthermore, irradiators are inevitably open structures since food must be able to pass freely in and out of the irradiation chamber.

Workers therefore run a high risk of exposure to lethal or near-lethal doses of gamma radiation.[50,51,52] Equally, the opportunities for sabotage are numerous. The contamination of shielding pools from leaking source elements has been documented in existing irradiation plants, as has the leakage and spillage of shielding water into the surrounding environment. The mishandling of discarded gamma sources has led to two serious contamination incidents in recent years.[53,54] Indeed, as a result of mismanagement at an irradiation plant, the Nuclear Regulatory Commission (NRC) revoked the licence of a major company in the US irradiation industry.[55]

In the light of these facts, it is extraordinary that the US Environmental Protection Agency (EPA) does not require an environmental impact statement prior to the siting of irradiation facilities, and that the NRC does not require special security measures. Clearly, the pressure to 'solve' the nuclear waste problem is guiding agency decisions, as non-regulation will greatly facilitate the licensing of hundreds of new irradiation facilities. Such facilities, however, cannot be in the best interest of those who work in or live near them, nor of the general public who will have no choice but to eat food which has effectively been legally contaminated.

Conclusion

The viability of food irradiation as a processing technology is based upon three false assumptions: first, that ionizing radiation can be used safely and effectively to destroy living organisms in food without producing dangerous changes in food chemistry; second, that hazardous by-products of nuclear weapons manufacture can be used safely and effectively in the civilian sector; and third, that dispersing radioactive materials into the environment results in an acceptable level of radiation exposure for any single individual.

In fact, the chemical changes in food produced by ionizing radiation are already known to be hazardous, and the FDA's claimed ignorance of that well-documented hazard is unques-

upheld a decision against the FDA by the District Court of Appeals in Washington, DC, charging that FDA had violated the Food, Drug and Cosmetic Act when it approved the use of two dyes shown by animal testing to be weak carcinogens.[16] The effect of this decision is to strengthen further the Delaney Amendment, which forbids the addition of any known human or animal carcinogen to food, drugs, or cosmetics. Since food irradiation is defined as a food additive,[18] the evidence set out in Table II shows it would be a violation of the Delaney Amendment to permit the treatment of food with irradiation.[17]

The view that the FDA's actions in the field of food irradiation have been unlawful and dangerous to public health has also been expressed at the state level; legislation banning the sale of irradiated foods has been enacted in the state of Maine, and is pending in New York, New Jersey, Alaska, Vermont, New Hampshire, and Pennsylvania. Citizen initiatives to ban irradiated food are underway in Florida and Oregon. Efforts to disperse into society at large the wastes from the manufacture of nuclear weapons is hardly a proper basis for food and public health policy. It represents a real threat to our existence, comparable to, if more protracted than, the direct use of those weapons on civilian populations. It cannot be allowed to continue.

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NEWS RELEASE

STATE OF ALASKA

OFFICE OF THE GOVERNOR
P.O. BOX A
JUNEAU, ALASKA 99811

STEVE COWPER,
GOVERNOR

FOR INFORMATION CONTACT:

DAVID RAMSEUR
PRESS SECRETARY

TERENCE O'MALLEY
DEPUTY PRESS SECRETARY

(907) 465-3500

FOR IMMEDIATE RELEASE
Feb. 7, 1989
No. 89-25

COWPER SAYS STATE TO DECLINE FOOD IRRADIATION FACILITY

JUNEAU--Gov. Steve Cowper, prompted by concerns about the potential impact on sales of Alaska seafood products, announced today that the state has opted against building a food irradiation demonstration facility in Alaska.

The Governor said the decision was made in large part because of the potential for harm to the sales of Alaska seafood. Fishermen and seafood industry officials say public fears about irradiated food could put a sizeable dent in the sales of Alaska seafood.

"I don't normally discourage the seeking of information about new techniques," Cowper said. "But I'm convinced that the association of Alaska with food irradiation will have a detrimental effect on Alaska seafood sales. That fear may not be rational, but that doesn't change the fact that Alaska can get hurt."

At issue is whether the state should apply for federal funds to build a facility to conduct tests of a process in which food is exposed to a measured dose of radiation.

-MORE-

Food irradiation is intended to kill harmful parasites and bacteria, thus improving wholesomeness and extending shelf-life, but there are questions about the long-term effects of irradiation on food.

The University of Alaska-Fairbanks Institute of Northern Engineering recently completed an analysis of food irradiation options and applications and recommended seeking federal funds to build a demonstration facility in Alaska.

But the Governor said too many questions remain for Alaska to proceed to build a demonstration facility at this time. For example, he said the federal Food and Drug Administration has not approved irradiation for the processing of fishery products, consumers are suspicious of the process and there is no procedure for processing and handling irradiated seafood to ensure that a uniform, high quality product reaches the consumer.

Cowper said the Alaska seafood industry is virtually unanimous in its opposition to the irradiation project and that many other Alaskans have written to oppose the project.

-30-

UNITED FISHERMEN OF ALASKA

211 4th Street, Suite 106
Juneau, AK 99801
907-586-2820

UNITED FISHERMEN OF ALASKA
Resolution 89-5

WHEREAS food irradiation destroys or depletes amino acide, nucleic acids, and vitamins A, B (thiamin), B2, B3, B6, B12, C, E, K and folic acid, and

WHEREAS food high in polyunsaturated fatty acids (which are increasingly being valued for their contribution to health), when irradiated, form large molecules that cannot be degraded by the body, can partially obstruct blood vessels and increase blood pressure, and

WHEREAS food irradiation is known to produce unstable, chemically reactive free radicals which are highly toxic and increase carcinogenesis, mutogenesis and cardiovascular disease in animals and in man, and,

WHEREAS reviews of the available literature on irradiated food overwhelmingly indicate adverse effects on animals including development of testicular tumors, kidney diseases, shortened life spans, loss of weight, increased rate of infertility and death of offspring, and

WHEREAS the botulism bacterium, Clostridium botulism, is perversely resistant to gamma radiation (irradiation), while most of its natural competitors, including those that alert us to the decay of foods, are destroyed, and

WHEREAS resistant strains of Salmonellae have been developed by repeated irradiation under laboratory conditions, and

WHEREAS acceptable and effective methods of preserving food (freezing, canning, vacuum packing, etc.) already exist and irradiation does not eliminate the need for refrigeration, packaging and good food hygiene, and

WHEREAS several major markets for Alaska seafood, including Japan, Great Britain, the Scandinavian countries, West Germany, New Zealand and some states, have completely banned the sale of irradiated foor for public consumption or halted further exploration of irradiated food due to consumer opposition, and

WHEREAS the price of irradiated food will be 2 to 24 cents per pound higher than non-irradiated food, and

WHEREAS the Department of Energy has provided $400,000 to the University of Alaska, Fairbanks, to help Alaska determine the feasibility of irradiating fresh and frozen fish, other seafood and agricultural products, and

WHEREAS the Department of Energy is the primary promoter of food irradiation as a means of inexpensively extracting weapons-grade plutonium from the reprocessing of nuclear waste, and

WHEREAS the specific use of radioactive cesium-137 or other radioactive waste products for food irradiation treatment in Alaska involves another whole range of concerns, including but not limited to worker and public safety (permitted radioactive emissions are 20 times higher than nuclear power plants), transportation of nuclear waste, construction of a radiation facility in a seismically inactive and tsunami-free area, and contamination of groundwater, the food chain and the environment by the highly water-soluble cesium-137,

NOW THEREFORE BE IT RESOLVED that United Fishermen of Alaska strongly opposes the irradiation of seafood in the state of Alaska.

Theo Matthews — Feb 14, 1989

Theo Matthews
President

Date

Alaska State Legislature

Official Business

P.O. Box V
State Capitol
Juneau, Alaska 99811

REPRESENTATIVE RANDY PHILLIPS
HOUSE DISTRICT 15
(907) 465-4949

Memorandum

TO: Representative Johnny Ellis
Chairman

House Health, Education and Social Services Committee

FROM: Representative Randy Phillips RP

DATE: January 17, 1989

RE: House Bill 25
Labelling Requirements

Jim Nordlund of your staff expressed an interest in the current status of labelling requirements for irradiated foods.

At the advice of Carl Dasser, Federal-State Relations, Food and Drug Administration, I contacted Clyde A. Takeguchi, Division of Food and Color Additives, Center for Food Safety and Applied Nutrition, Food and Drug Administration, Washington, DC 20204 [telephone: (202) 472-5740]. Mr. Takeguchi advises that the labeling requirements for irradiated food have been extended until 1990. This is the requirement that both the symbol and the wording be on the item. Unless extended again, the wording will be dropped after 1990 and only the label will be required.

If you have further questions, please do not hesitate to contact me.

ATTACHMENT 17

Representative Randy Phillips
File on Food Irradiation
January 15, 1989

NOTE: *indicates a report attached to Karla Hart's 11/19/87 research
**indicates a report attached to Hart's 11/30/87 supplemental research

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MEMORANDUM

TO: Senator Dick Eliason, Chairman
Senate Labor & Commerce Committee

FROM: Representative Ronald Larson R.L.

DATE: April 13, 1989

RE: CSHB 29 (L&C)

Referred to your committee today was CSHB 29 (L&C), an Act establishing the Alaska Racing Commission and authorizing parimutuel wagering. I would like to take this opportunity to respectfully request your consideration for scheduling a hearing on this bill at your earliest convenience.

This bill is basically the same as HB 32 from last year's legislative session. Offering local option provisions for parimutuel wagering, my intent with this piece of legislation is to help establish some private sector economic development. I also feel this could help Alaska's struggling agricultural community.

If you or any of your staff have any questions, please don't hesitate to contact either myself or John Bitney of my staff at 3727.

Thank you for your time and consideration.