

ALASKA LEGISLATURE COMMITTEE FILES 1987-1988 8672
5538 SSTA SJR 22 - SJR 39 1/10

The Nuclear Freeze

In recent months, a proposal for a U.S.-Soviet nuclear weapons freeze has attracted widespread attention. A resolution supporting such a freeze has been submitted to Congress, and versions have been placed on the November ballot in several states. While the wording of different versions varies, and some call for eventual reductions in arms levels, the basic idea is this:

The President should immediately propose that the United States and the Soviet Union adopt a mutual freeze on the testing, production, and deployment of nuclear weapons and missiles and new aircraft designed primarily to deliver nuclear weapons, subject to strict verification.

The U.S. Government recognizes that the proposal represents the best of intentions: to reduce the likelihood of nuclear war and encourage more rapid progress in a critical and exceptionally complex area of arms control. We all share these objectives. But, after carefully reviewing the proposal, we have concluded that a freeze at existing nuclear levels would have adverse implications for international security and stability and would frustrate attempts to achieve the goal on which we all agree: the negotiation of substantial reductions in the nuclear arsenals of both sides.

What Kind of Arms Control Agreements Do We Seek?

Four principles underlie the U.S. approach to arms control. We seek agreements that:

- *Produce significant reductions* in the arsenals of both sides;
- *Result in equal levels of arms on both sides*, since an unequal agreement, like an unequal balance of forces, can encourage coercion or aggression;
- *Are verifiable*, because when our national security is at stake, agreements cannot be based upon trust alone; and
- *Enhance U.S. and allied security and reduce the risk of war*, because arms control is not an end in itself but an important means toward securing peace and international stability.

These four principles were highlighted by the President in his speech of November 18, 1981. They are the foundation for the U.S. position in the current Geneva negotiations between the United States and the U.S.S.R. on intermediate-range nuclear forces (INF). They also form the basis for our approach to strategic arms negotiations with the Soviet Union, negotiations we will call START—*Strategic Arms Reduction Talks*.

What Are the Drawbacks of a Freeze Proposal?

While the Administration shares the genuine and deeply felt convictions that have given rise to the freeze proposal, we believe the proposal does not constitute sound defense or effective arms control policy, and thus we cannot support the freeze itself. A freeze would be dangerous to security, stability, and the cause of peace for the following reasons:

- *A freeze at existing levels would lock the United States and our allies into a position of military disadvantage and vulnerability.* The freeze would prevent us from correcting existing dangerous deficiencies in our nuclear forces caused by the sustained Soviet buildup. The substantial improvements in the Soviet force of intercontinental ballistic missiles (ICBMs), for example, have given the Soviet Union the means to destroy a large part of our ICBM force. In addition, there are about 600 Soviet intermediate-range nuclear missiles capable of striking our NATO allies. These missiles are not offset by any comparable U.S. systems. In this case, a freeze would prevent us from restoring the balance.

- *A freeze is not good enough.* We do not want to cap deployments at current levels; we want significant reductions in the nuclear arms of both sides, reductions that will lead to a stable military balance. The United States has already offered a bold new arms control initiative at the negotiations in Geneva on land-based intermediate-range nuclear missiles. We proposed a "zero option" under which the United States would cancel the planned deployment of Pershing II missiles and ground-launched cruise missiles in exchange for the elimination of comparable Soviet intermediate-range nuclear missiles. Our objective in negotiating strategic arms control agreements is also to achieve significant reductions.

- *A freeze would make significant arms control more difficult.* The Soviets would have little incentive to agree to reductions in strategic and intermediate-range nuclear arms if they knew they could simply freeze the existing military situation. This has already been demonstrated in the area of intermediate-range forces, where the U.S.S.R. initially refused our offers to negotiate while steadily deploying some 300 SS-20 missile systems. The Soviets agreed to come to the negotiating

Introduction of Strategic Weapons by the U.S. and U.S.S.R. 1972-1982

ICBM—Intercontinental Ballistic Missile
 SLBM—Submarine-Launched Ballistic Missile
 SSBN—Nuclear-Powered Ballistic Missile Submarine
 ALCM—Air-Launched Cruise Missile

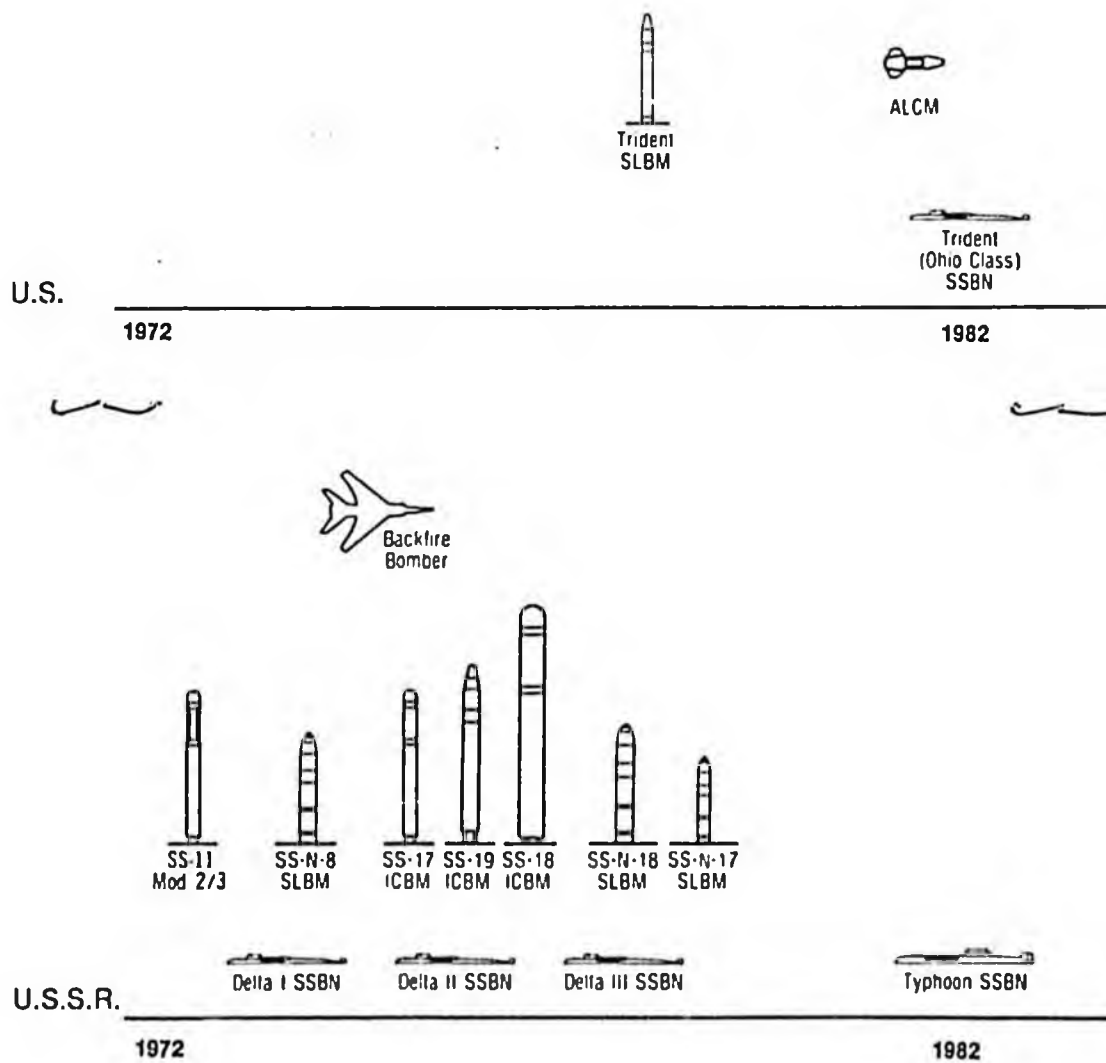


table only when it became clear that we and our NATO allies were determined to take steps to counter those SS-20 deployments.

- *A freeze would cast serious doubt on American leadership of the NATO alliance.* In 1979, in the face of continuing Soviet deployments, the members of the alliance agreed to begin deployment in 1983 of U.S. Pershing II and ground-launched cruise missiles and to seek a U.S.-U.S.S.R. arms control agreement to reduce intermediate-range nuclear forces. A freeze now would, in effect, be a unilateral decision by the United States to withdraw from this joint allied undertaking.

- *A freeze on all testing, production, and deployment of nuclear weapons would include important elements that cannot be verified.* The practical result is that the United States would live up to a freeze in all its aspects, while there would be considerable doubt that the Soviets would also live up to it. We simply cannot afford to base our national security on trust of the Soviets.

A Freeze and the Soviet Buildup

During the past decade, the Soviet Union has mounted a sustained buildup across the entire range of its nuclear forces. Soviet modernization efforts have far outstripped ours, particularly in the development and deployment of intercontinental ballistic missiles, which now pose a major threat to a large part of our land-based ICBM force. In the last 10 years, the Soviets introduced an unprecedented array of new strategic weapons into their arsenals, including the SS-17, SS-18, and SS-19 ICBMs, the Typhoon and Delta submarines and several new types of submarine-launched missiles, and the Backfire bomber. During this same period, the United States exercised restraint and only introduced the Trident missile and submarine and the cruise missile.

This trend has been harmful to the security interests of the United States and its allies and to global stability. It is not just a question of numbers. As their military capability has grown, the Soviets have increasingly resorted to the use of military force directly, or through proxies such as Cuba, to intervene in areas farther and farther from their borders. The increased assertiveness of Soviet behavior—the invasion of Afghanistan, pressure on Poland, support for insurgency in Central America—reflects growing Soviet confidence in their military capabilities.

ICBMs. Since 1972, the Soviets have developed and deployed at least 10 different variants of three new types of ICBMs. In the same period, the United States deployed no new types of ICBMs and only one variant of the existing Minuteman. In 1986, we plan to begin deployment of the MX, the first new U.S. intercontinental ballistic missile in 16 years.

Sea-Based Forces. The commissioning of the first U.S. Trident submarine in 1982 marked the end of a 15-year period during which the United States did not build any new ballistic missile-firing submarines. In this same period, the U.S.S.R. added over 60 missile-firing submarines in four new or improved classes. The Soviets are now deploying two new types of missile submarines—the Typhoon and the Delta III—while we are building only the Trident.

Bombers. When the first B-1 bomber becomes operational in 1985, it will have been nearly a quarter of a century since the last U.S. heavy bomber was produced. In contrast, the Soviets have produced more than 250 modern Backfire bombers that have inherent intercontinental capabilities. The Soviets also have improved their large air defense system designed to counter our bomber force. A freeze would not constrain these Soviet air defenses.

The chart on pages 4 and 5 compares the introduction of new strategic weapons by the United States and the U.S.S.R. and shows the momentum of the Soviet buildup over the last decade. As the chart shows, the Soviets introduced 12 new or improved nuclear weapons systems, while the United States only introduced three, and they upgraded or expanded every area of their nuclear arsenal.

Moreover, in most significant measures used to judge strategic forces—total number of systems, total number of ballistic missiles, total destructive potential—the Soviets now surpass the United States. Soon they could equal and surpass us in number of warheads, the one area where the United States has traditionally had an advantage.

The President entered office with a mandate to correct these trends. The modernization program he announced in October 1981 is designed to restore the strategic balance and prevent nuclear war. In so doing, it will give the Soviet Union a strong incentive to negotiate with us to achieve genuine arms reductions.

Conclusion

The Reagan Administration is committed to equitable and verifiable arms control aimed at substantial reductions in military forces. While the freeze proposal reflects the desire of people everywhere to reduce the threat of nuclear war, it would not promote reductions, equality, or verifiability. Rather, it would accomplish the opposite. A freeze at existing levels would lock in existing nuclear inequalities while making further progress in arms control difficult, if not impossible. For these reasons, our goal in arms control must be the negotiation of substantial reductions in the nuclear arsenals of both sides. We can do better than a freeze.

quest for lasting peace. And, over time, as the nations mutually reduce their nuclear armaments (again, in a way that can be scientifically verified by all concerned) the threat of atomic holocaust will significantly diminish.

If the world fails to achieve this kind of nuclear disarmament is there any doubt that sooner or later, either by design or accident, one nation or the other will use its nuclear weapons?

And if that happens it is foregone that other nations will respond without strait.

The result would have to be near-total destruction of life on earth. (Just recall the panic, loss of human life, damage and contamination of food hundreds of miles away when a single accidental melt-down occurred recently in the Soviet Union.)

But nuclear destruction need not happen. We have the capacity, through verifiable agreements such as the initiative proposes, to make the threat of nuclear war obsolete.

What would be the State of Alaska's role in this? The initiative calls upon the governor to conduct our Alaskan affairs in ways that conform with this policy. It directs the lieutenant governor to deliver copies of the Act to Congress and to the President of the United States. It lets our national leaders and policymakers know that Alaskans stand for common-sense peace.

Similar initiatives have already passed in local Alaska elections. Now Alaska, alone of all the states, has a nuclear freeze initiative on the ballot this fall. This is our chance to speak and act positively on the issue of peace not only statewide but nationally through press attention to our unique ballot question.

Mike M. Miller, Alaska State Representative & prime sponsor.

Statement OPPOSING the Nuclear Arms Freeze Proposition

Your vote on this resolution sends a message—an international message. Unfortunately, this resolution aims the wrong message at the wrong people. It is also naive, simplistic and cruelly false solution to a complex and deadly problem which it would only aggravate.

Chernobyl and Bhopal show that the ultimate danger to human survival is technology itself, not just the risk of nuclear war. Future energy or biogenetic disasters could terminate life on our planet even more certainly than "nuclear winter", and the Soviet system suppresses genuine environmental activism. A primary source of Arctic air pollution is the USSR. Nuclear weapons ended the "conven-

tional" holocaust of World War II, and Deterrence has been one of the few successes in curbing Soviet militarism and mistakes.

A "freeze" of the research, development and production of nuclear weapons cannot be verified. Our spy satellites may read license plates, but the Soviets have nonetheless succeeded in seriously violating existing nuclear and biological weapons treaties. The Soviets' unrepented murder of Major Arthur Nicolson demonstrates that even their signed guarantees of on-site treaty verification inspections mean nothing.

Our government has heard our concern about the cost and dangers of the arms race. It has tried to negotiate fair, verifiable disarmament treaties which will also continue deterring war. The Soviets refuse these and break others. Genuine Soviet peace activists attempting to petition their government are condemned to KGB psychiatric prisons.

Soviet leaders do not feel threatened by the terror and terrible costs of the arms race. They see Western "peace" activism as only a tool for nuclear terrorism, to demoralize our resistance to their increasingly aggressive militarism. Our FBI verified KGB involvement in the formation of the American freeze movement.

When unilateral agitation like this resolution undercuts our government's bargaining position and even leads Soviet leaders to think the arms race may be winnable, they have no use for genuine disarmament. While the Kremlin promotes a nuclear arms freeze, even the **Washington Post** has editorially opposed it as bad policy.

This resolution tells the Kremlin that nuclear terrorism works on Alaskans. Such fear and weakness precipitated Hitler's invasion of Poland and the Pearl Harbor attack. Such agitation led to our desertion of the Cambodians and Vietnamese and to the genocide which resulted.

Despite Kremlin propaganda, Soviet military preparations betray a doctrine that nuclear war is "winnable". (Even our Pentagon has renounced that.) Strategic advantage goes to the attacker, and Soviet development and deployment of nuclear weapons and delivery systems surpassed us in the 1970's. Freezing our attempt to restore deterrence encourages Soviet attack.

Judging by their fast reaction to our State Senate's Wrangel Island resolution and Gennady Gerasimov's recent visit here, Soviet leaders realize Alaska's military and geopolitical importance and monitor us closely.

If you want to do something to help deter another world war, to express solidarity with our government's struggle for genuine disarmament and to send the Kremlin a strong and clear message that Alaskans can't be snowed, then please help vote this down.

Lou Coatney, Juneau

BALLOT MEASURE NO. 1

Initiative No. 83-03

NUCLEAR WEAPONS FREEZE

The initiative would officially recognize that the prevention of nuclear war is the greatest challenge facing the Earth and that the nuclear arms race dangerously increases the risk of a war that would destroy humanity. The initiative would promote mutual and verifiable nuclear weapons freeze, to be followed by nuclear weapons reduction. The initiative would direct the governor to conduct the state's affairs in conformity with the initiative's goals.

A vote "FOR" adopts the initiative.

FOR

A vote "AGAINST" rejects the initiative.

AGAINST

NEUTRAL SUMMARY—83-03

Prepared by the Legislative Affairs Agency

This initiative would declare as the policy of the state the promotion of a mutual and verifiable nuclear freeze to be followed by a reduction in nuclear warheads, missiles, and other delivery systems in order to halt the nuclear arms race and to reduce the risk of nuclear war. The initiative bases this policy on its recognition that the greatest challenge facing the earth is the prevention of nuclear war by accident or by design and that the nuclear arms race is dangerously increasing the risk of a holocaust that could be humanity's final war. The governor is directed to conduct the affairs of the state and to carry out state programs in conformity with this policy.

FULL TEXT OF THE PROPOSITION

For An Act Entitled: "An Act relating to the establishment of a nuclear freeze as the policy of the State."

BE IT ENACTED BY THE PEOPLE OF THE STATE OF ALASKA:

Section 1. **DECLARATION OF POLICY.** It is the policy of the State of Alaska: (1) to recognize that the greatest challenge facing the Earth is to prevent the occur-

rence of nuclear war by accident or design;

(2) to recognize that the nuclear arms race is dangerously increasing the risk of a holocaust that would be humanity's final war;

(3) to promote a mutual and verifiable freeze followed by reductions in nuclear warheads, missiles, and other delivery systems in order to halt the nuclear arms race and to reduce the risk of nuclear war.

Section 2. **IMPLEMENTATION.** (a) The governor shall conduct the affairs of state and carry out state programs in conformity with this policy.

(b) The lieutenant governor shall deliver copies of this Act to Congress and the President of the United States.

Section 3. **EFFECTIVE DATE.** This initiative shall be effective when enacted according to law.

Statement IN SUPPORT of the Nuclear Arms Freeze Proposition

Alaskans have a wonderful opportunity to make a meaningful contribution to world peace when they vote August 26. They can do this by casting their vote in the "For" (meaning "yes") column on the Nuclear Freeze Initiative question they'll find on the ballot.

It is important, however, to realize several things the initiative does **not** do:

The initiative does **not** encourage or obligate the U.S. to any sort of **unilateral** or "go-it-alone" policy regarding a freeze or reduction of nuclear warheads. It calls, instead, for a **mutual** freeze and reduction of such weapons. If other nations—particularly the Soviet Union—will not participate, there is no obligation for the U.S. to do so.

And, the initiative does not call for any sort of "blind trust" toward the Soviets or any other nation. Instead it specifies that any agreement must be not only mutual but **verifiable** before we agree to participate. In other words we have to have arrangements in place to scientifically verify that no one is cheating, or there's no deal.

Truly, we have nothing to lose by adopting this policy.

But what will we gain?

For starters, just the freezing of production of nuclear weapons, just the limiting of arsenals to their present strength—which is already sufficient to destroy civilization as we know it today, many times over— will be a significant step forward in the

(CONTINUED ON BACK SIDE)

I. The Administration's Position.

A. THE NUCLEAR FREEZE, APRIL 1982. (U.S. Department of State)

Explains reasons for Reagan Administration's opposition to nuclear arms freeze. Cites massive Soviet strategic build-up in 1970's, etc..

B. REPORT OF THE SECRETARY OF DEFENSE CASPAR W. WEINBERGER TO THE CONGRESS; FEBRUARY 4, 1985, p.45.

Secretary Weinberge: -- "the Pentagon" -- states, "We are under no illusions about the dangers of nuclear conflict. I can think of no clearer or better statement of U.S. policy than that which President Reagan has made on numerous occasions: 'A nuclear war cannot be won and must never be fought.'" Explains that even if we Americans don't believe nuclear war is winnable, Soviet leaders -- judging by their preparations [rather than their propaganda] -- apparently do. Further explains that to continue deterring Soviet miscalculations and nuclear war we must meet their standards of deterrence -- not just our own.

C. SOVIET MILITARY POWER, 1986. (U.S. Defense Department)

Describes ongoing build-up of Soviet war machine and threat it poses. Describes tactical and strategic weapons systems such as first-strike SS-24 and SS-25 ICBMs and Soviet "star wars" weapons development.

D. NUCLEAR WINTER AND NATIONAL SECURITY: IMPLICATIONS FOR FUTURE POLICY. (U.S. Air Force Air University)

Analysis and discussion of warnings about the risk of "nuclear winter" from members of our American scientific community.

II. 30Mar83 WASHINGTON POST editorial, "The Freeze Debate".

"But in our view the proposal itself still amounts to bad public policy." Other, excellent points.

III. ARMS FREEZE: WHO IS FOR AND WHO IS AGAINST. 1984.

Soviet Novosti Press Agency pamphlet promoting a nuclear arms freeze which I picked up in Soviet San Francisco consulate. Attacks Reagan Administration for its objections to the freeze.

IV. Soviet KGB involvement in formation of American freeze movement.

A. Oct82 READER'S DIGEST, "The KGB's Magical War for 'Peace,'" by John Barron.

Describes KGB's infiltration/manipulation of Western peace movements. Active involvement of Soviet KGB operatives Oleg Bogdanov and Yuri Kapralov at March 1981 Georgetown University meeting where America's nuclear arms freeze movement was organized and operationally begun.

B. 13Nov82 NY TIMES, "Sources are Cited for Charge of Soviet Tie to Arms Freeze."

President Reagan had claimed involvement of "foreign agents" in American freeze movement. Critics howled "McCarthyism". White House cites Barron's READER'S DIGEST article as primary source. FBI says President "accurate" in describing "Soviet attempts to influence the peace movement." *[The KGB did not get involved to promote peace and disarmament.]*

V. KGB psychiatric persecution of genuine Soviet peace activists.

A. 13Sep82 NEW YORKER magazine, "The Talk of the Town: Peace."

Russian peace activist Mikhail Ostrovsky expelled from Soviet Union, describes KGB persecution of members of the nonviolent nongovernment Soviet "Group to Establish Trust Between the USSR and the USA." Asks Western peace movements to pressure Soviet leaders into releasing group leader Sergei Batovrin from KGB psychiatric prisons. Batovrin forced to take psychiatric drugs. [Batovrin later expelled from USSR.]

Ostrovsky describes how the 80 million members of the official Soviet peace organization are so government-dominated that their demonstration signs are made for them, never handmade.

B. 21Mar86 EMPIRE Ltr-Ed: "An Appeal for Help for Prisoners of Conscience."

Juneau peace and human rights advocate Charles Rohrbacher describes condemnation of genuine Soviet peace activists -- including two 17-year-old girls -- to KGB psychiatric prison. [Under Amnesty International pressure like this KGB later released three of the prisoners.]

- C. 21Mar86 JUNEAU EMP'IRE editorial: "Two Faces of Soviet 'Peace'"
 Biting contrast of "Soviet Samantha Smith" Katya Lycheva's trip to Disneyland with the KGB condemnation of young Soviet peace activists to psychiatric prison.
- D. 7Jul86 U.S. NEWS & WORLD REPORT, "The Trap of Arms Control", by Zbigniew Brzezinski.
 President Carter's National Security Advisor explains how Kremlin negotiates arms treaties only for propoganda and improving military superpower status -- not for genuine disarmament. Describes damage done to Western negotiating efforts for genuine disarmament by freeze movement and other anti-deterrence agitation.

VI. Soviet violations of arms treaties.

- A. Spr83 FOREIGN AFFAIRS, "'Yellow Rain' and the Future of Arms Agreements."
 Documents treaty-violating use of Soviet toxin weapons agr'nst civilians in Afghanistan and Indochina. Describes "bee-droppings" disinformation disseminated through Western media -- hideously obscene, considering the victims' suffering. State Department casigated for bungling the handling of this Soviet treaty violation.
- B. 30Nov83 EMPIRE Ltr-Ed: "Soviet Violations of Arms Treaties."
 Describes Soviet treaty violations covered in Western media, including accident in Sverdlovsk germ warfare laboratory. Explains "Catch-22" inadequacies of remote sensing -- "national technical means" -- for treaty compliance verification.
- C. ARMS CONTROL: U.S. OBJECTIVES, NEGOTIATING EFFORTS, PROBLEMS OF SOVIET NONCOMPLIANCE.
 (U.S. Arms Control and Disarmament Agency)
- D. SPECIAL REPORT NO. 122: SOVIET NONCOMPLIANCE WITH ARMS CONTROL AGREEMENTS, 1Feb85
 (U.S. State Department)
 FINALLY, Reagan Administration documents and lists Soviet arms treaty violations. U.S. goal of strategic arms reduction (rather than just freeze) described.

VII. Soviet environmental disregard.

- A. 40Oct84 EMPIRE, "Once-pure Arctic Air Dirtied by Soviet, European Industry.", by David Foster, AP.
 "Despite the area's pristine image, scientists say Arctic air contains as much dirt as some rural and suburban areas, with the Soviet Union the major polluter."
- B. 21Nov84 EMPIRE Ltr-Ed: "Other Testaments" (re-titled by EMPIRE as "Soviet System Poses Biggest Threat of All")
 Written before Chernobyl, letter describes Soviet radioactive waste disaster at Kyshtym, Sverdlovsk germ disaster, etc., and how Soviet environmental policies represent a longterm threat to human survival even greater than the risk of nuclear war/winter. Says "Day After" and "Testament" films are out of context and distorting since there have been no similar dramatizations broadcast about Soviet environmental disasters, psychiatric prisons, Afghanistan atrocities, etc..

VIII. Soviet interest in Alaska.

- A. 20Feb86 EMPIRE Ltr-Ed: "Soviet 'Ultimatum' Delivered to Senators."
 Alaska Performing Lobbyists for Peace organizer Dixie Belcher lobbies against State Senate's Wrangel Island resolution, claiming Soviets had threatened to end plans for her musical peace tour to Siberia. Dixie never conceded that using her group as a political hammer against the Wrangel resolution was wrong or wouldn't happen again.
- B. 30Apr86 EMPIRE, "Moscow Editor Promotes U.S., Soviet Relationship."
 Kremlin propagandist Gennadi Gerasimov visits Juneau as guest of Dixie Belcher. (Later, at his World Affairs Council talk, Gerasimov promotes his book attacking U.S. star wars program. In response to my question about the Soviet killing of U.S. Army Major Arthur Nicolson (in the course of his treaty-authorized direct/on-site verification inspection duties) Gerasimov says Major Nicolson was just "in the wrong place at the wrong time" -- no regrets or Soviet commitment to prevent future killings.)

IX. Consequences of U.S. quitting its military defense responsibilities.

"The Killing Fields" film

Searing depiction of mass extermination of Cambodians by Marxist-Leninist revolutionaries. Almost half the population murdered or starved by collectivization. The typical attempt to blame Cambodian suffering on Nixon didn't wash.

Handwritten signature and date:
 1 Aug 86

SJR

25

SENATE COMMITTEE REPORT

FIRST COMMITTEE OF REFERRAL

Date of 4-14-88 5-DAY NOTICE
IN ACCORDANCE WITH UNIFORM RULE 23

FURTHER: JUDICIARY
FINANCE

**FISCAL NOTE(S) ATTACHED **
IN ACCORDANCE WITH AS 24.08.035
(see below)

3/6/87

DATE TURNED INTO OFFICE 4-21-88

Mr. President:

STATE AFFAIRS Committee considered SJR 25

Proposing an amendment to the Constitution of the State of Alaska relating to income from the permanent fund.

and recommended:

- replace with CS _____ same title
- attached amendment(s) and new title
- do pass
- do not pass
- no recommendation
- individual recommendations
- further referral to _____
- letter of intent adopted and attached

** Committee attached or adopted fiscal note(s)
 zero fiscal impact

MEMBERS SIGNING DO PASS

OTHER RECOMMENDATIONS

No Rec
Do Not Pass -
"40/30/30" plan is superior to
SJR 25

[Signature]
Chairman signature and recommendation

Committee Backup Attached

RECEIVED MAR 30 1988

March 26, 1988

Senator Rick Halford
C/O Pouch V
Juneau, Ak. 99811

Dear Senator Halford,

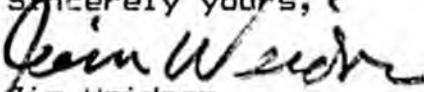
I heard you on the radio re: budget cuts.

Budget cuts are not very palatable, so here is a suggestion:
For every buck cut, add 50 cents to the PF dividends.
You would have a lot of public support, the money would do wonders for
the economy, and show everyone how budget cuts can be beneficial to
them personally!
What do you think of this approach?

Also, consider putting SJR-25 on the ballot in exchange for ELF.
I view SJR-25's placement on the ballot as the most important
legislation in Juneau! For 10 years we have haggled over what to do
with PF earnings. The best time to make the a decision is when the
pressure of lower oil income prices is off---not when the price goes to
5.00 bucks!

Also, the 530 million dividend payment reserve fund should be plowed
into the 9 billion where it is safe and will continue to bring money
into the state and pay dividends for years to come.

Sincerely yours, c


Jim Weidner
5479 C.H.S.R.
Fairbanks, Ak. 99701
488-6366

'Government gifts' should go before tapping fund



Jay Hammond
bushra'fings

There is now before the legislature a proposed constitutional amendment to require a public vote before permanent fund earnings could be spent for other than dividends or inflation proofing. Objection comes from legislators concerned that a sudden emergency might pose an insurmountable need to dip into those earnings.

Of course, we're a far cry from insurmountable financial need to start fund dipping so long as there remain on the books non-mandated government programs which subsidize Alaskans inequitably with no consideration for need. These programs should be first sacrificed before "equitably" penalizing all Alaskans by trimming their pro-

spective dividends through trapping current fund earnings. Similarly, so long as there remains off the books a state income tax or other more appropriate revenue "enhancements," it is premature to use those earnings. Unfortunately, however, actions required to balance

the budget from more appropriate sources probably confront most legislators with insurmountable political obstacles. After all, it's far less painful to offend a mostly oblivious public by tapping their future dividends than it is to face more immediate backhanding at the ballot box by all those extremely attentive special interests which will be outraged should their particular government gift be reduced or charged for.

Accordingly, let's add an emergency clause to that proposed constitutional amendment: "Provided, however, if by 2/3 vote each legislative House and the governor conclude an emergency exists, they may borrow from the

permanent fund's undistributed income account. At the next general election voters would be asked whether they wished to forgive the loan or compel the legislature to pay it back at a rate of interest it would have earned had it remained in the fund."

I've little doubt but that the public would sanction a truly warranted dip into fund earnings. After all, a recent poll alleged that Alaskans may be less concerned about alternative use of fund earnings than once thought. Perhaps. However, before the legislature acts on this presumption it should bear in mind how the polling question was posed. Of course a drowning man is going to

clutch the first straw that floats by, be it ever so flimsy. So let's sail out a few of more substance for them to cling to. Let's flesh out that list of budget balancing alternatives to see which one the public deems as most seaworthy.

I'd like to see the public's response to a poll which asked:

List in order of preference what you believe to be the most appropriate means of budget balancing:

- 1) Re-imposition of the income tax.
- 2) Reduction of the state payroll.
- 3) Elimination of non-mandated selective state subsidies not based on need.
- 4) Deferral of the economic

limit factor which otherwise will accord oil companies roughly \$150,000,000 a year in tax breaks.

5) Reduction of future dividends through expenditure of permanent fund earnings.

I placed use of fund earnings at the bottom where I think it belongs. These should be tapped only after all other sources have been exhausted. While many Alaskans may not agree with that ranking, I'll bet you next year's dividend check that very few would place my No. 5 at the top of their list.

□ Jay Hammond was governor of Alaska from 1974 to 1982.

Poll: More Alaskans eye permanent fund for aid

By SUE CROSS

THE ASSOCIATED PRESS

Alaskans appear more willing than ever before to spend the Alaska Permanent Fund, probably because so many of them are in financial trouble, says Anchorage pollster David Dittman.

In a \$20,000 survey of Railbelt area residents, paid for by the Alaska Senate, Dittman found almost two-thirds of the respondents support spending the excess earnings of the permanent fund.

And if the economy declines further, 43 percent said, it would be OK to spend the principal of the \$9 billion oil-money savings account.

"This is the first time in anything we've done that people were willing to use it," Dittman said.

"For a long time, if you said permanent fund, it didn't matter if you said 'earnings' or 'principal,' it was followed by 'No,'" he said.

Dittman presented his findings Friday to the Senate Finance Committee.

Committee Co-chairman Rick Halford, R-Chugiak, said he was surprised by the change in attitude toward the permanent fund, but believes the responses might have differed if the question was expanded.

The poll-takers asked people if the earnings left over after permanent fund dividends and inflation proofing are paid should be used to "help pay for programs to help the economy." Sixty-four percent said "yes;" 32 percent said "no."

The excess earnings reserve held \$56 million as of Dec. 31.

Halford, a vocal opponent of any plan to tap the Permanent Fund, said more people would have disapproved of the idea had they been told use of the excess earnings could eventually slow the growth of the fund and decrease the size of their dividends.

Dittman said he did not believe the answers would have changed.

The telephone survey was answered by 1,002 people in 27 Railbelt communities, from Valdez and Cordova in the south to Fairbanks and its surrounding communities on the north end. The margin of error for the poll was estimated at 1 percent to 3 percent.

Senate President Jan Falks, R-Anchorage, said she commissioned the poll because she wanted a data base for use in judging economic development proposals.

She did not request a statewide survey, she said, be-

cause at the time she did not realize the seriousness of economic problems in other parts of Alaska. If legislators outside the Railbelt want their areas polled, the questions could be included in later statewide surveys by Dittman, she said.

Falks said the biggest surprise in the poll was Alaskans' assessment of the economy.

Almost one in four Railbelt residents said they are seriously considering leaving Alaska because of economic problems, and 19 percent said they are "very likely" or "quite likely" to leave the state within the next two years.

More than half the people polled said their families had suffered wage cuts, reduced work hours or job losses in the past two years.

"The situation is worse than I thought it was," Falks said.

Who do Alaskans blame? A third of the respondents say government or some part of it: the Legislature, politicians in general, federal officials, local officials, former Gov. Bill Sheffield and Gov. Steve Cowper.

Oil companies and oil-producing countries were next on the list.

When asked how they goofed, Alaskans said government spent too much money and on the wrong things. The second most popular response was that those who were to blame had "let oil prices go down."

At the same time, many respondents said government should help improve the economy by spending more money on various programs.

Among their top suggestions for legislative action were passing the strongest possible law to enforce local hire and lowering home mortgage rates.

Respondents also generally liked Cowper's proposals for an education endowment and a science foundation, though they were not asked how the state should find money to establish those or other programs included in the questions.

Falks said senators will consider the poll results when deciding what type of economic aid programs to fund.

House Speaker Ben Grussendorf, D-Sitka, said representatives also will study the poll and are especially interested in questions regarding the permanent fund.

But Grussendorf said he will withhold judgment on the specifics of the survey until he can read it in more detail and determine whether the answers were influenced by how the questions were asked.

Poll: Public more inclined to spend permanent fund

FDXS 2/6/88 (F)

By SUE CHICKS

Associated Press Writer

JUNEAU—Alaskans appear more willing than ever before to spend the Alaska Permanent Fund, probably because so many of them are in financial trouble, says Anchorage pollster David Dittman.

In a \$20,000 survey of Railbelt area residents, paid for by the Alaska Senate, Dittman found almost two thirds of the respondents support spending the excess earnings of the permanent fund.

And if the economy declines further, 43 percent said, it would be OK to spend the principal of the \$9 billion oil money savings account.

"This is the first time in anything

we've done that people were willing to use it," Dittman said.

"For a long time, if you said permanent fund, it didn't matter if you said 'earnings' or 'principal.' It was followed by 'No,'" he said.

Dittman presented his findings Friday to the Senate Finance Committee.

Committee Co-chairman Rick Halford, R-Chugiak, said he was surprised by the change in attitude toward the permanent fund, but believes the responses might have differed if the question was expanded.

The poll takers asked people if the earnings left over after permanent fund dividends and inflation

(See FUND, Page 10)

FUND

(Continued from page 11)

proofing are paid should be used to "help pay for programs to help the economy." Sixty-four percent said "yes," 32 percent said "no."

The excess earnings reserve held \$556 million as of Dec. 31.

Halford, a vocal opponent of any plan to tap the permanent fund, said more people would have disapproved of the idea had they been told use of the excess earnings could eventually slow the growth of the fund and decrease the size of their dividends.

Dittman said he did not believe the answers would have changed.

The telephone survey was answered by 1,002 people in 27 Railbelt communities, from Valdez and Cordova in the south to Fairbanks and its surrounding communities on the north end. The margin of error for the poll was estimated at 1 percent to 3 percent.

Senate President Jan Faiks, R-Anchorage, said she commissioned the poll because she wanted a data base for use in judging economic development proposals.

She did not request a statewide survey, she said, because at the time she did not realize the seriousness of economic problems in other parts of Alaska. If legislators outside the Railbelt want their areas polled, the questions could be included in later statewide surveys by Dittman, she said.

Faiks said the biggest surprise in

the poll was Alaskans' assessment of the economy.

Almost one in four Railbelt residents said they are seriously considering leaving Alaska because of economic problems, and 19 percent said they are "very likely" or "quite likely" to leave the state within the next two years.

More than half the people polled said their families had suffered wage cuts, reduced work hours or job losses in the past two years.

"The situation is worse than I thought it is," Faiks said.

Who do Alaskans blame? A third of the respondents say government or some part of it, the Legislature, politicians in general, federal officials, local officials, former Gov. Bill Sheffield and Gov. Steve Cowper.

Oil companies and oil producing countries were next on the list.

When asked how they goofed, Alaskans said government spent too much money and on the wrong things. The second most popular response was that those who were to blame had "let oil prices go down."

At the same time, many respondents said government should help improve the economy by spending more money on various programs.

Among their top suggestions for legislative action were passing the strongest possible law to enforce local hire and lowering home mortgage rates.

Respondents also generally liked

Cowper's proposals for an education endowment and a science foundation, though they were not asked how the state should find money to establish those or other programs included in the questions.

Faiks said senators will consider the poll results when deciding what type of economic aid programs to fund.

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But Grussendorf said he will withhold judgment on the specifics of the survey until he can read it in more detail and determine whether the answers were influenced by how the questions were asked.

SJR

26

SENATE COMMITTEE REPORT

FIRST COMMITTEE OF REFERRAL

Date of 3/25/87 5-DAY NOTICE
IN ACCORDANCE WITH UNIFORM RULE 23

FURTHER: HESS

**FISCAL NOTE(S) ATTACHED 2 **
IN ACCORDANCE WITH AS 24.08.035
(see below)

3/9/87

DATE TURNED INTO OFFICE MARCH 31, 1987

Mr. President:

STATE AFFAIRS

Committee considered SJR 26

Relating to Siberian medical research.

and recommended:

[] replace with CS _____ [] same title
[] attached amendment(s) and [] new title

[] do pass

[] do not pass

[] no recommendation

[] individual recommendations

[] further referral to _____

[] letter of intent adopted and attached

** Committee [] attached or [] adopted fiscal note(s)
[] zero [] fiscal impact

MEMBERS SIGNING DO PASS

OTHER RECOMMENDATIONS

Rich Hill
Rep. P. Josephson
Jan Turk

Sen. Bill Smith

Chairman signature and recommendation

[] Committee Backup Attached

**STATE OF ALASKA 1987 LEGISLATIVE SESSION
FISCAL NOTE**

REQUEST: _____

Bill Version : SJR 26
Publish Date : 3/25/87

Revision Date: SJR 26
Title : Siberian Medical Research

Agency Affected: University of Alaska
BRU : none

Sponsor : S Finance
Requestor : S State Affairs

Components : _____

EXPENDITURES/REVENUES: (Thousands of Dollars)

| OPERATING | FY 87 | FY 88 | FY 89 | FY 90 | FY 91 | FY 92 |
|------------------------|-------|-------|-------|-------|-------|-------|
| PERSONAL SERVICES | | | | | | |
| TRAVEL | | | | | | |
| CONTRACTUAL | | | | | | |
| SUPPLIES | | | | | | |
| EQUIPMENT | | | | | | |
| LAND & STRUCTURES | | | | | | |
| GRANTS, CLAIMS | | | | | | |
| MISCELLANEOUS | | | | | | |
| TOTAL OPERATING | | 0 | | | | |

| | | | | | | |
|----------------|--|--|--|--|--|--|
| CAPITAL | | | | | | |
|----------------|--|--|--|--|--|--|

| | | | | | | |
|----------------|--|--|--|--|--|--|
| REVENUE | | | | | | |
|----------------|--|--|--|--|--|--|

FUNDING: (Thousands of Dollars)

| | | | | | | |
|---------------|--|---|--|--|--|--|
| GENERAL FUND | | 0 | | | | |
| FEDERAL FUNDS | | | | | | |
| OTHER | | | | | | |
| TOTAL | | | | | | |

POSITIONS:

| | | | | | | |
|-----------|--|--|--|--|--|--|
| FULL-TIME | | | | | | |
| PART-TIME | | | | | | |
| TEMPORARY | | | | | | |

ANALYSIS : (Attach a separate page if necessary) No fiscal impact

Prepared by: Brian Rogers, Director of Budget Development
Division : University of Alaska

Phone : 474-6490
Date : March 25, 1987

Approved by ^{Director} Brian Rogers
Agency : University of Alaska

Date : March 25, 1987

Distribution (by preparer):

- Legislative Finance
- Legislative Sponsor
- Requestor
- Office of Management and Budget
- Impacted Agency(ies)
- Senate Secretary

**STATE OF ALASKA 1987 LEGISLATIVE SESSION
FISCAL NOTE**

Bill Version : SJR 26
Publish Date : _____

REQUEST: _____
Revision Date: _____
Title: Relating to Siberian
medical research
Sponsor: Senate Finance Committee
Requestor: _____

Agency Affected: University of Alaska
BRU: _____
Components : _____

EXPENDITURES/REVENUES: (Thousands of Dollars)

| OPERATING | FY 87 | FY 88 | FY 89 | FY 90 | FY 91 | FY 92 |
|------------------------|-------|-------|-------|-------|-------|-------|
| PERSONAL SERVICES | 0 | 0 | 0 | 0 | 0 | 0 |
| TRAVEL | | | | | | |
| CONTRACTUAL | | | | | | |
| SUPPLIES | | | | | | |
| EQUIPMENT | | | | | | |
| LAND & STRUCTURES | | | | | | |
| GRANTS, CLAIMS | | | | | | |
| MISCELLANEOUS | | | | | | |
| TOTAL OPERATING | 0 | 0 | 0 | 0 | 0 | 0 |

| | | | | | | |
|----------------|--|--|--|--|--|--|
| CAPITAL | | | | | | |
|----------------|--|--|--|--|--|--|

| | | | | | | |
|----------------|--|--|--|--|--|--|
| REVENUE | | | | | | |
|----------------|--|--|--|--|--|--|

FUNDING: (Thousands of Dollars)

| | | | | | | |
|---------------|---|---|---|---|---|---|
| GENERAL FUND | 0 | 0 | 0 | 0 | 0 | 0 |
| FEDERAL FUNDS | | | | | | |
| OTHER | | | | | | |
| TOTAL | | | | | | |

POSITIONS:

| | | | | | | |
|-----------|--|--|--|--|--|--|
| FULL-TIME | | | | | | |
| PART-TIME | | | | | | |
| TEMPORARY | | | | | | |

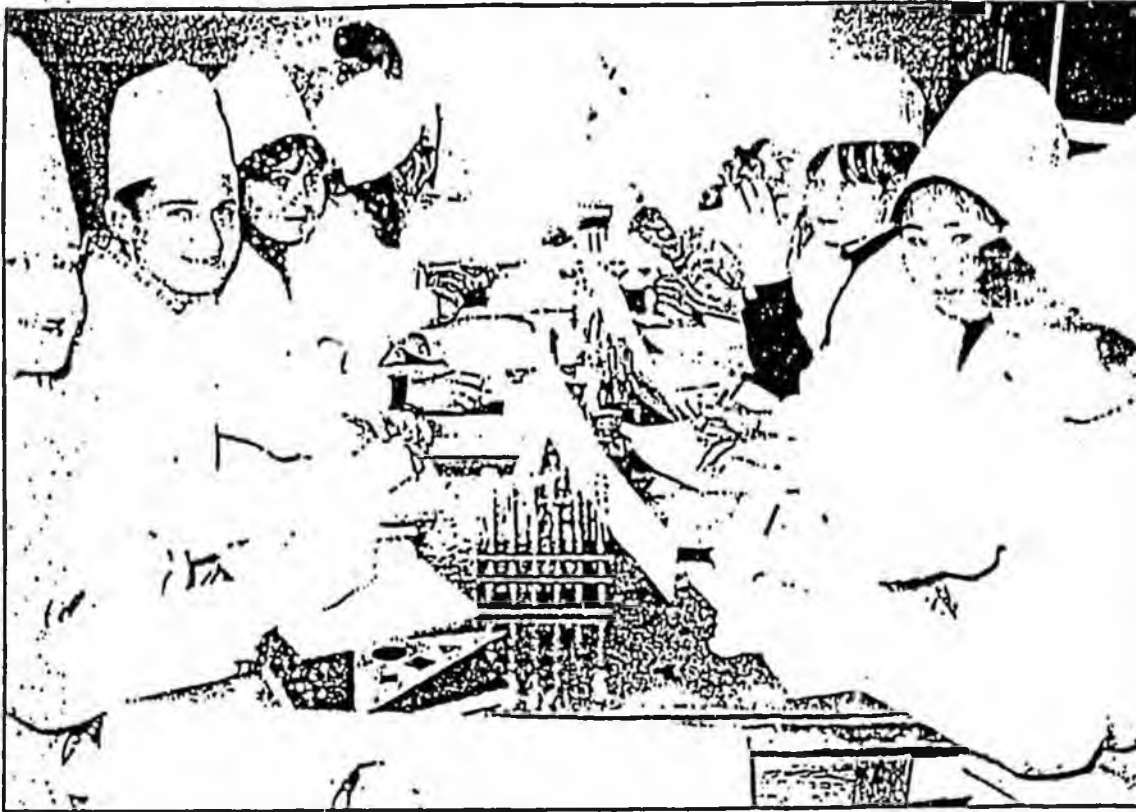
ANALYSIS : (Attach a separate page if necessary)

Prepared by: _____ Phone: 465-4985
Division: Senator John Binkley, Co-chairman Date: March 10, 1987
Senate Finance Committee
Approved by Commissioner: *John Binkley* Date: _____
Agency: _____

- Distribution (by preparer):
- Legislative Finance
 - Legislative Sponsor
 - Requestor
 - Office of Management and Budget
 - Impacted Agency(ies)
 - Senate Secretary



SUBMITTED BY SENATE FINANCE



Siberian medical students participate in a biochemistry lab experiment. Ted Mala, MD, U.S. coordinator of the Soviet medical exchange, says: "I'm looking at this as a rebuilding of the Siberia-Alaska land bridge. Through health, a greater understanding into peace will hopefully follow."

Plucky MD pulls together Soviet medical exchange

Ted Mala, MD, Alaskan public health physician, is not sitting around waiting for mid-April, when a delegation of Soviet dignitaries will meet with U.S. officials in Washington, D.C., to discuss and act on cultural and medical exchange programs.

The April meeting is significant for the two nations because President Carter in 1978 severed such exchanges with the Soviets to protest their human rights policies. But it means much more than history to the 40-year-old Alaskan native. It means his U.S.-Siberian medical exchange project, a first for the two nations, will become a reality.

Dr. Mala, born to Eskimo and Russian parents, is already laying the foundation for the first medical exchange between Siberian and Alaskan and other U.S. health officials in the area of:

- Psychological aspects of adaptation to the north.
- Nutrition and human health in the north.
- Effects of chronic stress in natives and newcomers to northern regions.
- Mechanisms of adaptive reactions of the immune system in northern conditions, and specific features of the immune deficiency and autoimmune diseases development.
- Biochemical and genetic peculiarities of the effects of alcohol on metabolic

Dr. Mala recruits participants for exchange project

To carry out the intent and design of the five-year exchange agreement between the U. of Alaska and Soviet Academy of Sciences, Siberia Branch, lots of help — in a variety of areas — is needed, said Ted Mala, MD, coordinator of the privately funded project.

This month, Dr. Mala, associate professor of health sciences at the U. of Alaska at Anchorage, will leave his teaching duties to traverse Canada and the lower 48 states to find "signers-up."

"This project is so new that no formula on how to arrange it has been developed," Dr. Mala said. "First I need to identify qualified scientists in one of the six defined research areas to name section chairpersons to help coordinate the work."

THOSE AREAS are in physiological adaptation to the north, nutrition, chronic stress, immune system functions in northern climates, biochemical and genetic as-

pects to alcohol metabolism in natives, and training natives to provide health care. Studies will involve natives, long-time settlers, new settlers, and transient workers.

He is seeking institutional or individual help on various projects that will require either on-site work, or research to be conducted at universities across the country.

"We'll need people to put up the Siberians in their homes when they come to Anchorage, and we'll also need Americans with expertise in laboratory technology, or standardizing data, or even translating," said Dr. Mala, who spearheaded the historic agreement. "We'll even take people willing to bake chocolate chip cookies for us," he joked.

Already several Canadian universities, including the U. of Alberta at Edmonton, have expressed interest in the medical research project, as have the U. of Minnesota and Harvard U.

Since the private agreement means raising funds, Dr. Mala said he was looking for people to approach foundations for grant money as well.

"I'm providing a base for this project. I have no specific numbers of people or institutions in mind at this time. Eventually, I would like to form a national advisory board with top experts to help guide us in international relations with representatives from the National Institutes of Health, the National Science Foundation, the U.S. Arctic Commission, the National Academy of Sciences, and the Institute of Medicine."

FOR NOW, however, Dr. Mala is asking that interested people, or institutions, write to him describing their interest and background, and what phase of the program they would like to work on.

His address is U. of Alaska, 3211 Providence Drive, ADM 289, Anchorage, Alaska, 99508, (907) 786-4746.

processes in Alaskan and Siberian populations.

- Training and preparation of natives

and medical specialists for the north. To prepare for the ambitious five-year, non-government-funded project, Dr.

Mala will travel extensively throughout Canada and the "Lower 48" to speak
Continued on next page



Ted Mala, MD (in gray coat), with the medical directors' staff (left) of Kharbarovsk Specialty Hospital in the U.S.S.R. In the photo above, Dr. Mala works out details of the exchange agreement with two Soviet medical officials.

Soviet medical exchange...

Continued from preceding page about the project and solicit assistance and funding from individuals, institutions, and foundations.

DR. MALA'S medical exchange project is one of a few private medical research projects that will be on the discussion table during the meeting of the U.S.-U.S.S.R. Joint Health Committee, said Jack Schmidt, PhD, acting director of the John E. Fogarty International Center for Advanced Study in the Health Sciences, part of the National Institutes of Health.

"At least three other private medical research projects — involving the Neurological Institute of New York at the Columbia-Presbyterian Medical Center, the Henry Winston Foundation of New York and the Burdenko Neurosurgical Institute in Moscow; the U. of Alabama at Birmingham and the Institute of Pharmacology in Moscow; and Baylor U. and the Institute of Rheumatology in Moscow — will be considered, Dr. Schmidt said.

WHEN THE Joint Health Committee meets on April 13-18, a list of "broad biomedical" programs will be discussed, including research in cardiovascular diseases, biomedical communications, cancer, infectious diseases, arthritis, and environmental health, in an official governmental exchange program, Dr. Schmidt added.

"New areas also will be discussed, such as primatology for biomedical research, sports medicine, and eye diseases," he said.

The reinvigoration of the joint health committee meetings is a result of President Reagan's and Soviet General Secretary Gorbachev's Geneva summit meeting in November, 1985, at which the two superpower leaders agreed to embark once again on new cultural and medical exchange programs.

In preparation for the April meeting, delegations of U.S. health officials have visited Moscow, and Soviet health officials have visited Washington, D.C., for preliminary talks.

Formal government approval by the United States for all projects, including private ones, is necessary to meet Soviet requirements, Dr. Mala said.

"There is no private-sector counterpart in the Soviet Union," he said.

WHILE THESE high-level preparations are under way, Dr. Mala explained the origin of his ground-breaking agreement, which happened rather serendipitously.

On a 1982 trip to Leningrad, his mother's birthplace, he was able to tour an alcoholism treatment center and to meet with members of the Soviet Medical Workers Union, a group 8 million strong, that works with the Soviet government to set health policy. Dr. Mala's affiliation with the American Public Health Assn., his work as secretary-general of the International Union for Circumpolar Health, which includes the Soviets, and his Russian heritage helped open some Soviet doors for him, he said.

"I share their heritage," Dr. Mala said. "Alaskans are very, very interested in Siberia, and have been for years. We are closer to Siberia than Seattle."

For example, Kotzebue, where Dr. Mala grew up, is situated above the Arctic Circle only three miles across the Bering Strait from Siberia.

FOLLOWING HIS initial visit, Dr. Mala was able to arrange further visits for himself and other Alaskan officials to Siberia, which is virtually closed to foreigners.

The Soviets acknowledged and acted on a letter from Dr. Mala to Gorbachev after the '85 summit, he said.

"I was the first Westerner allowed to visit Siberian medical facilities since the creation of the Iron Curtain," he said of his recent six-week sweep of Siberian medical facilities.

"Actually, American and other Western

medical communities stand to learn a lot from the Siberian research, since they use Western research standards and World Health Organization standards.

"The payoff [of the agreement] for the Soviets is that they have literally been cut off from the rest of the world, and this exposure will give them an opportunity to connect with colleagues and to have their work duplicated and verified for the credit that they deserve," Dr. Mala said.

Although Dr. Mala locally has received a tremendous amount of credit and attention for the program, he shyly accepts the limelight.

"I'm looking at this as a rebuilding of the Siberia-Alaska land bridge. Through health, a greater understanding into peace will hopefully follow," he said.

—Linda Bosy



'The payoff [of the agreement] for the Soviets is that they have literally been cut off from the rest of the world, and this exposure will give them an opportunity to connect with colleagues and to have their work duplicated and verified for the credit that they deserve,' Dr. Mala says.

In this issue:



- Soviet medical students
- MD pulls together Soviet medical exchange.—page 49
- Med student sets human-powered flight record.—page 3

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INFORMATION

From The UNIVERSITY OF ALASKA-ANCHORAGE

November 18, 1986

Announcement was made today of the history-making proposed medical exchange agreement between the University of Alaska, Anchorage (UAA) and the Siberian Branch of the Academy of Medical Sciences of the USSR (SBAMS). It is the first of its kind between medical research institutions in Siberia and any institution or country outside of the Soviet Bloc countries. This agreement is one of two in medicine that was approved by the President's Office on U.S.-Soviet Exchanges as a result of the Reagan-Gorbachev Summit Meetings in Geneva earlier this year.

Dr. Ted Mala, Associate Professor of Health Sciences and Coordinator for the agreement, returned this month from working six weeks in Siberia, visiting and photographing the major medical research institutes there as part of a U.S.-USSR Health Scientist Exchange Program Award under the U.S. Public Health Service.

The five-year agreement signed between UAA and the SBAMS includes initially six areas of involvement; 1) Physiological Aspects of Adaptation to the North; 2) Nutrition and Human Health in the North; 3) Effects of Chronic Stress in Natives and Newcomers to Northern Regions, Utilizing Laboratory Conditions; 4) Mechanisms of Adaptive Reactions of the Immune System in Northern Conditions and Specific Features of Immune Deficiency and the Development of Autoimmune Diseases; 5) Biochemical and Genetic Peculiarities of the Effects of Alcohol on the Metabolic Processes in both Alaskan and Siberian Populations; and 6) Medical Training for Natives and Specialists Working in the North.

The agreement will be reviewed and approved in April 1987, when the U.S.-Soviet Joint Commission on Health meets in Washington, D.C. In the interim, Dr. Mala is currently lecturing at various institutions in the U.S. and Canada on opportunities for involvement in this project as well as explaining the Siberian interests in developing joint research projects with the West. He can be reached at (907) 786-4746 for further information.

President's United States - Soviet
Exchange Initiative



Office of the Coordinator

September 26, 1986

Dear Dr. Mala:

On behalf of the President's U.S.-Soviet Exchange Initiative, I would like to thank you and the University of Alaska, Anchorage (UAA), for your participation in the meetings held here in Washington, D.C. with Mr. Ivan Nikitin of the Ministry of Health.

I am pleased that a successful agreement was reached between the UAA and the Soviet Academy of Sciences, Siberia Branch, for a joint health agreement. Your agreement represents the first time that the United States and the Soviet Union will study health problems of the polar region. Hopefully, your program will contribute creative approaches to the health problems the two countries share in common.

Thank you for your efforts to increase contact between the people of the United States and the Soviet Union in the spirit of the President's U.S.-Soviet Exchange Initiative.

Sincerely,

A handwritten signature in cursive script, appearing to read "Stephen H. Rhinesmith".

Stephen H. Rhinesmith
Coordinator

Dr. Theodore Mala
University of Alaska
3211 Providence Drive
Anchorage, Alaska 99508



**СИБИРСКОЕ ОТДЕЛЕНИЕ
АКАДЕМИИ МЕДИЦИНСКИХ НАУК СССР**

630099, Новосибирск,
ул. Советская, 18

**SIBERIAN BRANCH
OF THE USSR
ACADEMY OF MEDICAL SCIENCES**

18, SOWETSKAJA STREET,
630099 Novosibirsk, USSR

ПАМЯТНАЯ ЗАПИСКА

С 8 октября по 7 ноября 1976 года в Сибирском отделении АМН СССР был принят американский специалист профессор Теодор А. Мала. Цель его визита – обсудить перспективы научного сотрудничества по фундаментальным проблемам адаптации к Северу между Университетом Аляски (Анкоридж) и Сибирским отделением АМН СССР.

Обе стороны отметили, что сотрудничество между Университетом Аляски (Анкоридж) и Сибирским отделением АМН СССР представляет большой интерес для ученых обеих стран и направлено на укрепление дружбы и взаимопонимания между нашими народами.

В случае одобрения данного проекта совместной комиссией по советско-американскому сотрудничеству в рамках соглашения между Правительством СССР и Правительством США о сотрудничестве в области медицинской науки и здравоохранения от 23 мая 1972 года, стороны предлагают следующие темы для сотрудничества:

1. Изучить некоторые физиологические аспекты адаптации к условиям Севера в эксперименте.

Координаторы:

от СССР

Институт физиологии СО АМН СССР

от США

Университет Аляски, Анкоридж

2. Питание и здоровье человека на Севере.

Координаторы:

от СССР

Институт терапии СО АМН СССР

от США

Университет Аляски,

Анкоридж

3. Изучить особенности хронического стресса у коренных и пришлых жителей северных регионов и в эксперименте.

Координаторы:

от СССР

Институт клинической и
экспериментальной медицины
СО АМН СССР

от США

Университет Аляски, Анкоридж

4. Изучить механизмы адаптивных реакций иммунной системы в условиях севера и особенности развития иммуно-дефицитных и аутоиммунных заболеваний.

Координаторы:

от СССР

Институт клинической
иммунологии СО АМН СССР

от США

Университет Аляски, Анкоридж

5. Некоторые биохимические и генетические особенности влияния алкоголя на обменные процессы в эксперименте и у жителей Аляски и Сибири.

Координаторы:

от СССР

Институт терапии СО АМН СССР

от США

Университет Аляски, Анкоридж

6. Подготовка врачебных кадров из коренных народностей севера.

Координаторы:

от СССР

Медицинский институт, Хабаровск

от США

Университет Аляски, Анкоридж

Указанный выше перечень тем не исключает возможность его дальнейшего изменения и исправления.

По указанным выше проблемам предполагается:

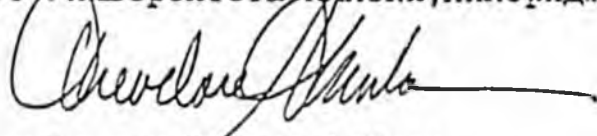
- а). Производить регулярно обмен научной информацией, для чего Университет Аляски, Анкоридж и Сибирское отделение АМН СССР выделяют место для хранения материалов и назначают ответственное лицо.
- б). Составить конкретный план исследований по каждой теме.
- в). Периодически (не реже одного раза в год) проводить рабочие совещания, коллоквиумы, научные конференции, семинары с целью согласования программ и методик планируемых исследований, а также для обсуждения их результатов.

- г). Производить ежегодный обмен специалистами в объеме 100 человеко-дней на эквивалентной безвалютной основе.
- д). Для обсуждения конкретных планов работы с непосредственными исполнителями предусмотреть поездку представителей Сибирского отделения АМН СССР в Университет Аляски, Анкоридж в первом полугодии 1987 года (3 человека на 15 дней).

Памятная записка подписана в двух экземплярах на русском и английском языках, оба текста идентичны и имеют одинаковую силу.

Данная договоренность вступит в силу после заседания совместной комиссии по советско-американскому сотрудничеству в области медицинской науки и здравоохранения в 1987 году в случае одобрения ею данного проекта сотрудничества между Сибирским отделением АМН СССР и Университетом Аляски, Анкоридж.


От Университета Аляски, Анкоридж:



профессор Теодор А.Мала

дата: November 6, 1986

От Сибирского отделения АМН СССР:



академик АМН СССР Ю.П.Никитин

дата: 04. 11. 86



СИБИРСКОЕ ОТДЕЛЕНИЕ
АКАДЕМИИ МЕДИЦИНСКИХ НАУК СССР

630099, Новосибирск,
ул. Советская, 18

SIBERIAN BRANCH
OF THE USSR
ACADEMY OF MEDICAL SCIENCES

18, SOWETSKAJA STREET,
630099 Novosibirsk, USSR

MEMORANDUM

The Siberian Branch of the Academy of Medical Sciences of the USSR (Novosibirsk) received the American specialist, Associate Professor of Health Sciences, Theodore A. Mala from October 8, 1986 to November 7, 1986.

The purpose of his visit was to discuss the perspectives for scientific co-operation on the fundamental problems of adaptation to the North between the University of Alaska (Anchorage) and the Siberian Branch of the Academy of Medical Sciences of the USSR (Novosibirsk).

Both sides have agreed that the cooperation between the University of Alaska (Anchorage) and the Siberian Branch of the Medical Academy of the USSR is of great interest for scientists of both countries and should be aimed to strengthening friendship and mutual understanding between Soviet and American peoples.

In case if this Memorandum being approved by the joint US - Soviet commission within the framework of the agreement between the governments of the USSR and the USA on the cooperation in medical sciences and public health of May 23, 1972, both sides propose the following general themes for co-operation:

1. To study some physiological aspects of adaptation to the North in experiment.

Co-ordinators:

from the USSR

Institute of Physiology,
Siberian Branch of the USSR
Academy of Medical Sciences

from the USA

University of Alaska, Anchorage

2. Nutrition and human health in the North.

Co-ordinators:

from the USSR

Institute of Internal
Medicine, Siberian Branch
of the USSR Academy of
Medical Sciences

from the USA

University of Alaska,
Anchorage

3. To study the effects of chronic stress in Natives and newcomers to northern regions utilizing laboratory conditions.

Co-ordinators:

from the USSR

Institute of Clinical and
Experimental Medicine,
Siberian Branch of the
USSR Academy of Medical
Sciences

from the USA

University of Alaska,
Anchorage

4. To study mechanisms of adaptive reactions of the immune system in northern conditions and specific features of the immune deficiency and autoimmune diseases development.

Co-ordinators:

from the USSR

Institute of Clinical
Immunology, Siberian Branch
of the USSR Academy of Medical
Sciences

from the USA

University of Alaska,
Anchorage

5. To examine experimentally the biochemical and genetic peculiarities of the effects of alcohol on metabolic processes in Alaskan and Siberian populations.

Co-ordinators:

from the USSR

Institute of Internal
Medicine, Siberian Branch
of the USSR Academy of
Medical Sciences

from the USA

University of Alaska,
Anchorage

6. Training and preparation of Natives and medical specialists for the North. (To be considered by the Ministry of Health of the USSR)

from the USA University of Alaska,
Anchorage.

The above mentioned list of themes does not excludes the possibility of its further changing and correcting.

It is proposed in the framework of the above mentioned problems:

- a). To exchange scientific materials on a regular basis.
Both University of Alaska, Anchorage and Siberian Branch of the USSR Academy of Medical Sciences will designate a specific location for those materials and appoint a responsible member of the staff.
- b). To draw up a detailed plan of investigations on each theme.
- c). Periodically (not less than once a year) to conduct working meetings, colloquia, scientific conferences, seminars with the purpose to co-ordinate programmes and methods of the planned investigations and to discuss the results of the work.
- d). Annually to exchange specialists in the form of scientific visits sponsored both by the University of Alaska, Anchorage and Siberian Branch of the USSR Academy of Medical Sciences (100 person/days).
- e). To discuss the concrete working plans with the direct performers to forsee the visit of siberian scientists to the University of Alaska during the first half-year of 1987 (3 persons for 15 days).

This Memorandum is signed in duplicate in Russian and English languages, both texts being equally authentic. This agreement will come into force after its approval at the meeting of the joint US - Soviet commission on the co-operation in medical sciences and public health in 1987.

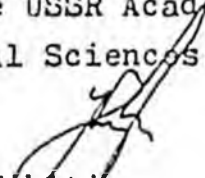
For the University of Alaska,
Anchorage:



T.A. Mala, MD, Associate Professor
of Health Sciences

Date: *November 6, 1986*

For the Siberian Branch
of the USSR Academy of
Medical Sciences:



Yu.P. Nikitin,
Deputy Chairman, Member
of the USSR AMS

Date: *04.11.86*

Siberia-Alaska— a model of cooperation

Theodore A. MALA, Professor of University of Alaska, Secretary-General of the International Union of Circumpolar Health, is of the opinion that the USSR and the USA have many problems in common, and thinks that the fact that the two countries are not dealing with them jointly defies elementary logics.

He spent one and a half months visiting all of the research institutions of the Siberian Department of the USSR Academy of Sciences in Novosibirsk and Khabarovsk in order to get acquainted with the R and D work done by local scientists involved in the research into problems of human adaptation in conditions of the North. This was the third time the US physician has visited our country. He says:

"There are special conditions of the North that bring Alaska and Siberia together and really demand that we work together. Physically Alaska is closer to Siberia than to the rest of the USA. You can see the Soviet Union from our territory. We have much history together and we have many people who are directly related by blood to people in Chukotka.

"People of the North always had a special love for each other. But today people in Alaska have no idea of what people of Siberia are like, there are no contacts between us. So we physicians of Siberia and Alaska decided that we would try to rebuild the bridge over the Bering Strait, using medical science as the means to do it. Illnesses have no political boundaries, and so we physicians

have a unique opportunity to bring people together.

"I've been offered the remarkable opportunity to come to the USSR and outline prospects for joint research together with the physicians of Siberia."

It is planned to sign such an agreement, which is a result of the Geneva summit, next April at the session of the Soviet-US Intergovernmental Commission on Health Protection. If it is signed, then, beginning with 1987, the University of Alaska and the Siberian Department of the USSR Academy of Medical Sciences will conduct joint research and conferences on fundamental problems of human adaptation to the conditions of the North.

"The USSR is the leader, of course, in North medical studies," says Dr. Mala. "There are many things to learn from our Soviet colleagues.

"Both our countries need more areas where we can work together. And we, physicians of Alaska and Siberia, hope that we can be a model for cooperation between the USSR and the USA in other fields."

Recorded by
Sergei YAKUSHIN

Novosibirsk



MOSCOW NEWS

No. 52 (3248), January 4-11, 1987

Price 1 dollar

CHANCELLOR
JAN 5 1987
OFFICE OF THE

Organ of the Union of Soviet Societies for Friendship and Cultural Relations with Foreign Countries and Novosti Press Agency First published October 5, 1930

U.S. and Soviet Plan Exchanges In Many Fields

Students in High Schools Are to Change Places

By IRVIN MOLOTSKY

Special to The New York Times

WASHINGTON, Aug. 5—The United States and the Soviet Union announced agreement today on 13 educational, scientific and cultural exchanges.

The accords were the latest to result from the meeting last November in Geneva between President Reagan and Mikhail S. Gorbachev. The accords bring cultural exchanges to a higher level than in late 1979, when President Carter cut them off to protest the Soviet intervention in Afghanistan.

Previous exchanges this year saw the Kirov Ballet of Leningrad and French Impressionist paintings from Moscow and Leningrad come to the United States, while painting collections from Washington and Los Angeles were sent to the Soviet Union.

Announcement at U.S.I.A.

The latest agreements were announced at the United States Information Agency, with Ambassador Yuri V. Dubinin of the Soviet Union and American officials participating.

Negotiations are continuing, and future exchanges, according to officials, may include the Metropolitan Opera and the Bolshoi Opera.

One of the accords signed today provides for the first exchange of high school students, in which 10 students from the Phillips Academy in Andover, Mass., are to change places next year with 10 Soviet youngsters from a special mathematics and physics school for gifted students in Novosibirsk.

In another program, American teachers of Russian and Soviet teachers of English will switch places for up to 10 months. The American participants are to be selected by the American Council of Teachers of Russian.

Another program calls for lecturers in history, economics and culture to exchange places. The American coordinating agency is the Council for the International Exchange of Scholars.

In medicine, the University of Alaska at Anchorage and the Soviet Ministry of Health will study the health problems of adaptation common to Alaska and Siberia; while the Neurological Institute of New York at the Columbia

Continued on Page 4

U.S. and Soviet Plan New Culture Exchanges

Continued From Page 1

Presbyterian Medical Center, and the Burdenko Institute of Neurosurgery in Moscow will also collaborate.

It is in cultural exchange, however, that ordinary people are likely to see most immediately the results of the summit agreement last November.

The Soviet Union has now agreed to send 62 Russian prerevolutionary paintings from the Tretyakov Gallery in Moscow and the Russian Museum in Leningrad. They are to be shown at the Renwick Gallery of the Smithsonian Institution here, at the Smart Gallery of the University of Chicago, and at Fogg Art Museum of Harvard University.

The exhibition will include work by Nikolai Ge, Sergei Ivanov, Ivan Kramskoi, Vladimir Makovsky, Vasily Perov, Valentin Serov, Ilya Repin, Vasily Surikov, Ivan Shishkin and Vasily Vereshchagin.

Repin and Vereshchagin were among the most celebrated Russian historical painters; Serov was an outstanding portraitist, and Shishkin is noted for his almost photographic rendition of forests and trees.

Many of the Russian artists belonged to the Wanderers' school, or called for the traveling exhibition of their works, which stressed themes of social consciousness. Perov is known for his "Village Procession," a depiction of drunken priests and peasants setting out to celebrate Easter; Ivanov concentrated on the squalor and misery of peasant life, and Makovsky focused on the tribulations of the urban poor and the mores of the upper classes.

In return, the United States will send 63 American paintings from the Smithsonian and other collections, to be ex-

hibited at the Hermitage in Leningrad and the Pushkin Museum in Moscow.

The American artists include Mary Cassatt, who spent most of her life in France; Frederick Church, Thomas Eakins, Childs Hassam, Winslow Homer, George Inness, William Sidney Mount and John Singer Sargent.

Vladimir Grenkov, the Soviet Culture Ministry's chief of foreign relations, who attended today's announcement, sounded hopeful when asked about the likelihood of a Met-Bolshoi opera company exchange. He said he met Monday with Jane Herman, director of presentations at the Met.

"Such an exchange is of great interest," Mr. Grenkov said, "but you understand there are 500 people involved. This requires financial efforts on both sides. I am sure we will be able to resolve this on our side. Whether Miss Herman can resolve this remains to be seen."

Miss Herman later said by telephone that she favored an exchange.

"The two great opera houses would love to find avenues of cooperation," she said. "It was nice to see that someone in the Soviet Government would make such a gesture."

Regarding the financing problem, she said, "Financially, we have not even considered the mode of operation and how much it might cost."

In Andover, Joseph C. Mestas, secretary of the Phillips Academy, said the students to be sent to the Soviet Union had not been selected, but were expected to be chosen from the school's Russian studies program.

"Russian language has been part of our curriculum since 1953," he said.

Other Soviet-American projects announced today were:

• The development of joint textbooks for the study of English and Russian as foreign languages.

• An exchange of delegations to examine computer applications to elementary and secondary education, an area that the Soviet Union is only now beginning to enter.

• The restoration of an exchange of six teachers in high schools and colleges, with the number increasing to 10 annually starting next year.

• An increase from 15 to 25 in an annual exchange of teachers for ad-

vanced language training.

• The assignment of a Soviet specialist to the United States to advise on the teaching of Russian.

• Increased consultations in health care and medical science.

Some projects were expressed in general terms. Part of today's announcement was also concerned with goals instead of agreements, such as the Soviet Union's proposing an exchange of 50 athletic delegations in 1987 and 1988, compared with 23 in 1985 and 45 scheduled for this year.

UAA-Siberian medical exchange

Mala to discuss 6-week Soviet tour

Dr. Theodore Mala, an associate professor in health science at the University of Alaska-Anchorage, will present a report to the community on the new UAA-Siberian Medical Exchange Program from 9 a.m. to noon Saturday in the UAA Arts Building, Room 150.

In November, Mala traveled to Siberia for a six-week tour of Soviet research institutes. As a result of U.S.-USSR agreements made at the Geneva Summit last fall and as a result of Mala's research into the medical concerns of the world's Arctic regions, Mala's Siberian trip helped to open an exchange program in the area of Soviet cold-weather medical research.

Mala said he hopes other Western scientists involved in Arctic research will participate in the five-year exchange agreement between UAA and the Siberian Branch of the Soviet Academy of Medical Sciences. The agreement calls for regular exchange of scientific papers, joint research projects and scientific meetings at least once a year.

The university community and the public are invited to attend Mala's slide presentation and lecture on Saturday and to become involved in the Alaska-Siberian exchange program.

Sign-up sheets for those wishing to become involved in the project are available. Those who want more information may call Mala at 786-4746.

The collaborative research agreement between the Soviet Union and the United States will be devoted to specific problems of the far North, with the researchers studying four groups of people: the Native popula-



tion, long-term settlers, new settlers and transients on short-term contracts for oil and gas projects or maintenance work on the second tri-Siberian railway.

Mala's father was Eskimo and his mother was Russian. He has tried for the past five years to get Alaska and Siberia to cooperate.

"Alaska and Siberia are very close to each other, separated by only two miles across the Bering Strait, and we

are 1,000 miles away from Seattle, the closest American city," he said. "Furthermore, Alaska used to belong to Russia."

Mala said that the breakthrough for the project came after he wrote to Soviet leader Mikhail Gorbachov. The Russians selected the project for inclusion in a large Soviet-American exchange program involving health, culture, higher education and sport.

PCE to continue for residents

by Pamela Crayez
for the Tundra Times

Residential consumers will be the last to feel budget cuts to the Power Cost Equalization Program for the Bush, according to Susan White, special assistant to the director of the Alaska Power Authority, which administers the program.

"They're (legislators) not going to turn off the lights and let people freeze in the dark," White said after talking with members of the House Finance Committee recently.

White appeared before the committee to explain the Power Cost Equalization Program, which subsidizes the cost of electricity for the Bush.

She said legislators have a tough task this year in cutting the state's budget.

Gov. Steve Cowper submitted a budget figure for the power program that is nearly \$6 million less than last year's budget figure of \$17 million. It will be up to the Legislature to decide on the final amount.

White said legislators asked her to prepare information for them on the actual residential need in the Bush.

"I feel that they really want to take a fair look at PCE," she said after meeting with legislators. "They didn't tear into the program."

White said the governor is proposing a task force to assess the Bush energy needs.

UAA prof wants to match Soviet work in far north

Public health cooperation set, but Siberian research far ahead of ours

By RICHARD MAUER
Daily News reporter

With the hard work of establishing U.S.-Soviet public health cooperation in the far north behind him, Ted Mala is finding that the really hard work is yet to come: organizing the projects, talent and money to match the ambitious research program long under way in Siberia.

Since the surprise announcement last summer that the University of Alaska-Anchorage and Columbia University in New York would be the only two American universities participating in joint medical research with Soviet institutions, Mala has dedicated his life to the success of the agreement.

On Saturday, Mala, an associate professor of health sciences at UAA, delivered a special lecture on campus on the unprecedented agreement, his recent visits to Siberia and Russia and what he hopes for the future. He also issued a call for volunteers to help in everything from typing and cookie baking to actual research.

Mala, who is also a physician, had spent four years getting nowhere in his attempt to establish some kind of cooperative relationship with public health experts in Siberia. Then came the Reagan-Gorbachev summit in Geneva in 1986, an East-West thaw, and talk of scientific and cultural exchanges.

Mala's groundwork, including trips he had taken to Moscow and Leningrad at his own expense, paid off. The Russians put two joint medical programs on the agenda: one, dealing with neurosurgery, involved Columbia and an institute in Moscow. The other



Daily News photo by Jim Lavender

Dr. Ted Mala: Much work to do.

dealt with a range of public health issues to be coordinated through Mala's office at the University of Alaska and the Siberian branch of the USSR Academy of Medical Sciences.

"The State Department and the President's office on governmental affairs were shocked that the Soviets put Alaska on the table," Mala said. "You'd expect San Francisco, or New York. But Alaska? That's the sunny part. The problem, now, or the goal, is

NORTHERN HEALTH: Work with Soviets

Continued from Page B-1

to prove we can handle something like that, the challenge of major research."

Mala spent six weeks in the Soviet Union last year. He came away sobered by the size of his task. By comparison with the billions of rubles in cold climate research poured into Siberia since World War II, Alaska is an intellectual backwater. The U.S. government's main arctic research center, a naval facility in Barrow, was closed some years ago.

"When I first started out, I was looking for some mechanism to work with the Soviet people on medical research. It turned out to be not a very simple agreement," he said. "The Soviets are really specialists in the North, with thousands and thousands of scientists, when we have only a handful of non-coordinated projects. The fact is, there is not that much hard research being done in Alaska."

Some 35 million to 40 million people live in Siberia, compared to a half million in Alaska. The Siberian capital, Novosibirsk, on the edge of the West Siberian Lowland at the latitude of Ketchikan, is a major industrial city of 1 1/4 million, compared to some

225,000 in Anchorage. Its 20-year-old physiology institute alone could contain a large portion of the UAA campus.

And until the doors opened last year, Siberian medical research had been off-limits to westerners, Mala said.

"The United States has ignored the North, because only a little part of the U.S. is in the North. All the Soviet Union is in the North, all of Canada is in the North. How are we going to understand the Soviet Union if we don't understand the North?"

For starters, Mala and his American and Soviet colleagues have targeted six areas for research:

- Physiological adaptation to the North. Scientists wish to learn what happens to the human body when people from southern climates move north. Why do some people lose their ability to resist illnesses, while others thrive? Will scientists in Alaska confirm Soviet research that it takes an average of seven years to fully adapt, and will our findings duplicate Siberian studies that show newly arrived women suffered high rates of complications during pregnancy? And what are the human effects of the aurora borealis and the electro-magnetic storms that play out

overhead? Mala said the Siberians have found that on certain days, accidents rates soar in their region, and he wants to compare statistics for Anchorage to see if the dates coincide.

- Nutrition and human health. How does diet effect life in the North, and how should food intake be changed to improve the health of the newly arrived? And what is happening to Natives as their diet is westernized? Can anything be learned about the link of diet to cancer?

- Effects of chronic stress. How do newcomers and Natives cope with chronic stress, cabin fever, and the changing cultural fabric of the North? Can some of these conditions be tested in laboratory animals?

- Immunology and autoimmune diseases, like arthritis and rheumatism. How does the body's immune system change with adaption to a cold climate?

- Genetics and alcoholism. Is there a genetic reason for the susceptibility of Alaska Natives to alcoholism? Scientists are fascinated by the discovery that some people of Asian origin, presumably including Eskimos and Indians, lack an enzyme that is be-

lieved to metabolize alcohol.

- Northern medical training. How can physicians and other medical specialists encouraged to reside for long periods of time in rural areas of the North? How can more Natives be educated in health specialties, and will they turn to their villages where they are?

To set up these joint search programs, Mala said plans to reject advice that only Alaskans be invited to participate.

"We're going to have talk about how to attract names in research up here," he said. The millions of dollars he expects the National Institutes of Health to invest in studies through the joint research program will require participation by major American universities, he said.

"We've got to get rid of the idea that we don't care because they do it Outside," he said. While there are many Alaskans conducting original research, many are not involved in what will be come national priorities. "And we don't have all the genetic specialists we need."

The result, however, could be the creation of a much stronger scientific base in Alaska, he said.

SJR

33

SENATE COMMITTEE REPORT

FIRST COMMITTEE OF REFERRAL

Date of 4.15.87 5-DAY NOTICE
IN ACCORDANCE WITH UNIFORM RULE 23

FURTHER: HESS
JUDICIARY

**FISCAL NOTE(S) ATTACHED _____ **
IN ACCORDANCE WITH AS 24.08.035
(see below)

DATE TURNED INTO OFFICE 4.22.87

Mr. President:

STATE AFFAIRS Committee considered SS SJR 33

labeling of irradiated food.

and recommended:

- replace with CS _____ same title
- attached amendment(s) and new title
- do pass
- do not pass
- no recommendation
- individual recommendations
- further referral to _____
- letter of intent adopted and attached

** Committee attached or adopted fiscal note(s)
 zero fiscal impact

MEMBERS SIGNING DO PASS

Walter Kunkley

OTHER RECOMMENDATIONS

John FRAKS No Rec
Paul Chy (No Rec)

Donald Willard to Rec
Chairman signature and recommendation

Committee Backup Attached

**STATE OF ALASKA 1987 LEGISLATIVE SESSION
FISCAL NOTE**

REQUEST: _____

Bill Version : SS SJR 33
Publish Date : _____

Revision Date: _____

Agency Affected : _____

Title: Labeling of irradiated food

BRU: _____

Sponsor: Kerttula

Components : _____

Requestor: Senate State Affairs

EXPENDITURES/REVENUES: (Thousands of Dollars)

| OPERATING | FY 87 | FY 88 | FY 89 | FY 90 | FY 91 | FY 92 |
|------------------------|-------|-------|-------|-------|-------|-------|
| PERSONAL SERVICES | | | | | | |
| TRAVEL | | | | | | |
| CONTRACTUAL | | | | | | |
| SUPPLIES | | | | | | |
| EQUIPMENT | | | | | | |
| LAND & STRUCTURES | | | | | | |
| GRANTS, CLAIMS | | | | | | |
| MISCELLANEOUS | | | | | | |
| TOTAL OPERATING | -0- | -0- | -0- | -0- | -0- | -0- |
| CAPITAL | -0- | -0- | -0- | -0- | -0- | -0- |
| REVENUE | -0- | -0- | -0- | -0- | -0- | -0- |

FUNDING: (Thousands of Dollars)

| | | | | | | |
|---------------|--|--|--|--|--|--|
| GENERAL FUND | | | | | | |
| FEDERAL FUNDS | | | | | | |
| OTHER | | | | | | |
| TOTAL | | | | | | |

POSITIONS:

| | | | | | | |
|-----------|--|--|--|--|--|--|
| FULL-TIME | | | | | | |
| PART-TIME | | | | | | |
| TEMPORARY | | | | | | |

ANALYSIS : (Attach a separate page if necessary)

Prepared by: Senate State Affairs Phone: 465-4522

Division: _____ Date: _____

Approved by Chairman Mitch Abood X Date: 4/22/87

Agency: _____

Distribution (by preparer):

- Legislative Finance
- Legislative Sponsor
- Requestor
- Office of Management and Budget
- Impacted Agency(ies)
- Senate Secretary

POSITION PAPER

SPONSOR SUBSTITUTE FOR SENATE JOINT RESOLUTION NO. 33

Sponsor Substitute for Senate Joint Resolution No. 33, relating to the labeling of irradiated food, requests the U.S. Food and Drug Administration (FDA) to adopt regulations requiring food whose components have been irradiated to be labeled as "irradiated". The Resolution further requests the FDA to cancel the expiration date of the current labeling regulations. The Resolution's stated rationale for seeking these FDA actions includes statements about the lack of labeling requirements for foods containing irradiated ingredients, the pending expiration of current labeling requirements, and the precedent of existing labeling requirements for chemical additives and other ingredients in food.

The following comments are addressed to specific statements in Sponsor Substitute for SJR 33:

Page 1
Lines 21-23

"Whereas the labeling requirements... are due to expire in 1988 before irradiated foods arrive in large quantities on grocery store shelves;"

Comment:

The expiration date for the existing labeling requirement applies only to the wording requirements. It does not apply to the mandatory use of the international symbol for irradiated food. Labeling in the form of the irradiated food symbol is required indefinitely. The symbol is shown below.



Page 2
Lines 3-5

"Whereas the long history of stringent labeling requirements for the chemical additives and ingredients in food provides ample precedent for the labeling of irradiated foods as irradiated;"

Comment:

Without very careful reading, one could interpret this statement to mean that irradiation of food is similar to a chemical additive or ingredient, which it is not. Irradiation is a method of processing food in the same manner as cooking and canning, and we are concerned, from a public education perspective, that these concepts not be confused.

Page 2
Lines 6-8

"Be it resolved that the Alaska State Legislature respectfully requests the United States Food and Drug Administration to adopt regulations requiring food whose components have been irradiated to be labeled as irradiated..."

Comment: It is the Department's position that the labeling of otherwise unprocessed irradiated foods is a reasonable requirement, but that no useful purpose would be served by requiring the labeling of processed foods containing irradiated ingredients.

It is important to recognize that the purpose of labeling irradiated food is to satisfy misbranding concerns. It is not related to food safety or health risk considerations.

Since foods which are irradiated and offered for sale in their "natural" state do not appear to the consumer to be processed, the federal government established the labeling requirement. However, the irradiation of one ingredient or one component in a multiple-ingredient food is a different situation, because such a food has obviously been processed. For this reason, for example, canned or frozen foods need not be labeled as canned or frozen since it is visibly obvious to the consumer that the food has undergone some manner of processing.

In addition, since spices are routinely irradiated and have been for years, this provision would require foods which contain minute quantities of irradiated spices to be labeled as irradiated. This would dilute the meaning of the label developed by the international community that was intended to inform the consumer that a specific food item had been irradiated when no other method of processing was visible.

With clarification of the reference to chemical additives and deletion of the request that the FDA adopt regulations requiring labeling of food containing components which have been irradiated, the department is neutral on the passage of the Sponsor Substitute for Senate Joint Resolution No. 33.

Recommended by: Elizabeth Ward
Elizabeth Ward
Director
Division of Public Health

Date: April 22, 1987

Approved by: Myra M. Munson
Myra M. Munson
Commissioner
Department of Health and
Social Services

Date: April 22, 1987

IRRADIATION COMPOUNDS VITAMIN LOSSES FROM COOKING, ARS REPORTS

Scientists with the Agriculture Department's Agricultural Research Service recently reported "a highly significant interaction" between irradiation and cooking in experiments with irradiated bacon.

In its recent semi-annual report of research progress submitted to USDA's Food Safety and Inspection Service, ARS reported that thiamine content of bacon in raw, cooked, or freeze-dried form degraded at a significantly higher rate during cooking if the bacon had been irradiated.

"The two processes, irradiation and cooking, produced degradation, but when the product was cooked after it had been irradiated the overall effect was greater than the sum of the processes applied individually," the report said.

ARS is still analyzing data from similar studies conducted using refrigerated pork and poultry, irradiated at doses up to 700 Krad.

Scientists at ARS' Eastern Regional Research Center recommended caution in reducing the salt content of irradiated processed meats, based on a study of turkey frankfurters which showed that gamma radiation "cannot totally compensate" for salt reductions in terms of botulinal toxin inhibition.

The cooperative study with the University of Wisconsin examined turkey frankfurters irradiated with 500 and 1,000 Krad, and three levels of salt, ranging from 1.5% to 3.25%.

While a radiation dose of 500 Krad was sufficient to inhibit botulinal toxin production in frankfurters containing 2.5% or more salt, neither 500 nor 1,000 Krad "was adequate to inhibit toxin production in products containing 1.5% salt with or without tripolyphosphate," the report said.

"The results are interpreted as indicating that salt should be reduced in processed meats with care; gamma radiation treatments cannot totally compensate for the salt reduction," it concluded.

Experiments to determine irradiation D-values for 21 strains of group D streptococci showed most strains with D-values between 30 and 100 Krad, but with two having D-values of 210 Krad and 470 Krad.

FOOD IRRADIATION

APRIL 1987 UPDATE



APR 13 1987

TWO FOOD IRRADIATORS PLANNED FOR EASTERN WASHINGTON

The Port of Pasco has submitted a bid to sponsor a demonstration food irradiator which will be mostly financed from the U.S. Dept. of Energy (DOE) Byproducts Utilization budget. Congress appropriated \$5 million in 1986 and \$ 5 million in 1987 to support 6 pilot irradiators. Commodities considered for the Washington facility will be apples, cherries, asparagus and possibly potatoes and onions. Cesium-137, as an irradiation source, would be supplied by the nearby Hanford Nuclear Reservation. Hanford would be responsible for the radioactive material if the plant ever had to be closed.

Northwest uses of irradiation could include control of the codling moth in apples, fruit flies in cherries and aphids in asparagus. The Port of Pasco, according to Mack Funk, Industrial Development Manager, sees the plant as strengthening the local economy.

The Port of Chelan County, Wenatchee, WA, is also considering an electron beam irradiator to irradiate Chelan apples, mainly for export. The irradiator would be purchased from Niel Nielson, Emergent Technologies Inc. The plant would cost \$ 10 - 12 million and would be financed by private investment or by industrial revenue bonds. There is some local enthusiasm if export markets could be guaranteed. Niel Nielson and Rep. Sid Morrison are trying to develop markets in China and Hong Kong, where consumer groups are either non-existent or at least, not vocally opposing food irradiation. Since an electron beam accelerator (think of it as a high-powered X-ray) does not use radioactive sources, the irradiator would be more acceptable to the local population than one using cobalt-60 or cesium-137.

Eastern Washington, because it hosts Hanford, has become the leader in promoting food irradiation. We must double our efforts to pass the Bosco/Mitchell bill on food irradiation and urge our Congressmen not to give the DOE any more of our tax dollars to spend on food irradiators. Industry, not the taxpayer, should provide its own venture capital to promote this dangerous technology.

THE BOSCO/MITCHELL BILL ON FOOD IRRADIATION (HR 956 / S 461)

The Food Irradiation Safety and Labeling Act of 1987

Rep. Doug Bosco of California has resubmitted his food irradiation bill which calls for more research before food irradiation is allowed. The bill, submitted last spring as HR 4762, has been renumbered HR 956. The Bosco bill extends the labeling requirements to irradiated ingredients used in processed foods and irradiated foods served at restaurants. It mandates a two-year study on food irradiation by the National Academy of Sciences, including the long term health effects and the environmental issues associated with the transportation and use of radioactive materials at irradiation facilities.

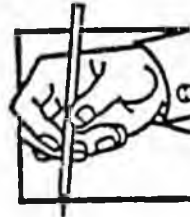
Without the passage of the Bosco bill, consumers will not be able to avoid irradiated foods. Already 1% of the spices are irradiated and used in processed foods without any notation on the label. It's impossible to tell which frozen pizzas, for example, use irradiated spices.

In Japan, some potatoes are irradiated to prevent sprouting, but they are not labeled or sold directly to the public. The irradiated potatoes are used in processed or restaurant foods. Japan does not allow the import of irradiated foods because of consumer opposition. Food irradiation is still banned in England and West Germany.

(continue to next page)

If American consumers want the choice of avoiding irradiated foods and want more research to be conducted, the Bosco bill must be passed. A companion bill has been submitted by Senator George Mitchell of Maine (S 461) so you can write both your U.S. Representative and your two U.S. Senators. The Bosco/Mitchell bill now has 65 co-sponsors in the House and 3 in the Senate- an amazing accomplishment for a consumer/environmental type bill.

DO YOUR PART! WRITE 3 LETTERS!



OTHER ITEMS:

- Representative Henry Waxman will hold a hearing in Washington, D.C. sometime this month on the FDA's handling of the food irradiation issue.
- The New Jersey state senate voted to ban the sale of irradiated foods in their state by a vote of 30 to 3!
- Rep. Ken Jacobsen of Seattle, WA submitted a state House Joint Memorial in support of the Bosco bill. It failed to get out of committee by the cut-off date but did gain some publicity for consumer opposition to food irradiation.
- Rep. Andrew Levin from Hawaii deleted the one million dollar appropriation from the Hawaii House budget for a DOE irradiator. Three cheers for the lobbying efforts of Denis Mosgofian and Kathy Dern of the National Coalition to Stop Food Irradiation.
- U.S. Rep. Sid Morrison of Washington state has not resubmitted his anti-consumer bill on food irradiation.
- Our CUFFS brochure has been updated to delete the Morrison bill and include the new Bosco/Mitchell bill numbers. Order an extra hundred (\$10 per 100) and spread them around your community. CUFFS provides speakers on food irradiation for local groups.
- Food Irradiation: The Facts by Tony Webb and Tim Lang is available from the London Food Commission, P.O. Box 291, London N51DU, UK. "Webb and Lang have produced a readable book for the layman... Those who propose permissive legislation will now have to respond in terms which can be understood by the non-scientist legislator and consumer." - The Lancet, Feb. 28, 1987. Tony Webb has been very active in opposing food irradiation in the U.K. Two other reports available from the London Food Commission are Food Irradiation in Britain and Food Irradiation- Who Wants It? Webb's book is also available in paperback (\$4.95) from Thorsons Publishers Ink, One Park Street, Rochester, Vermont, 05767.
- The European Parliament has refused to give food irradiation a "blanket approval" for Europe-wide use. It calls for labeling if foods are irradiated and asked for studies of alternative methods for preserving food.
- 1000 pounds of irradiated papayas were test-marketed in California this month. Some of them were sold at two Albertson stores. The address for Albertson's Corp. Hdqts. is P.O. Box 20, Boise, Idaho, 83726. Grocery stores operate on a very low profit margin and are responsive to consumer complaints. The National Coalition set up a papaya hot-line and picketed the stores known to be selling irradiated papayas.
- CUFFS is pleased to announce that Rep. Mike Lowry of Washington has signed up to co-sponsor the Bosco/Mitchell bill. We are hoping that Senator Brock Adams and other Washington Congressmen will join him. Send Washington petitions directly to Brock Adams.



THE BLAST SUPPER

It's the winter of 1985 and your first day on the job with Agriculture Canada. You and eighty other people have an important task to perform: you must determine if irradiated food is fit for the palates of Canadian consumers. Whether it is fit, period, is another matter, but you are not concerned. Your employer says it's safe. The World Health Organization says it's safe. The UN Food and Agriculture Organization says it's safe. Long before anyone else, the International Atomic Energy Agency declared it safe; but, of course, you never took their self-interested word seriously, did you?

But then the Consumers' Association of Canada declared it fit and desirable, and, well, even if Nader's Raiders south of the border declared food irradiation a health hazard, who are you to doubt Canadian content?

Seriously, you think, would national and international government regulators be cozying up to food irradiation so quickly if the risks weren't acceptably outstripped by the benefits?

So you sit in Ag Can's Building 55 safe from Ottawa's winter brittleness, comfortable, wrapped in a softly backlit booth. Three pieces of chicken breast; cubed and tender, rest on a tray before you. You spear each cube and savour its taste and texture.

"Surprise," you exclaim, "they taste equally of palatable chicken!"

"Food irradiation tastes OK, eh!"

And now you find your opinion cited and your words broadcast, while behind your all-in-a-day's-work the atomic regulators, safety speculators, public health negotiators and consumer raters spin

their soft web of seductive technology.

Zap! No more salmonella in chicken.

Zing! Onions and potatoes give up the bad habit of life and stop sprouting.

Whish! No more germs in the spices.

Whoosh! A longer unrefrigerated shelf life for veggies, fruits and grains that might otherwise rot amidst the rest of the world's 300 million tonnes of market-surplus food.

Presto! An end to world hunger.

Better yet, "This technique may prove as revolutionary as the discovery of canning nearly 175 years ago." (Frank Fraser, vice-president of Atomic Energy of Canada Ltd.'s food irradiation division.) Best of all, within ten years "it could grow into a billion-dollar-a-year industry in Canada."

But the small voices niggle away. Like Energy Probe's David Poch, in his recent book *Radiation Alert*: "There is very little understanding of the subtle long-term effects on human health due to food irradiation, and we may all become experimental guinea pigs."

Heard it before, haven't you? But you rationalize it off; heck, life itself's nothing more than an extended crap shoot, especially in the technological fast-lane. I mean, there've been over 400 studies and scientists who work for government (well, at least for those governments that haven't banned irradiation) and scientists who work for industry say the balance of the findings are no cause for concern.

There'll always be some scientists bringing up the mouse cancer stuff. But those were mice, right? Sure, there were those kids in India whose irradiated diet gave them chromosome damage, but we're taking safer doses here, aren't we? Besides, the industry says that study was no good.

As for vitamin loss in the food itself, the same thing happens when you wok it, steam it, broil it or braise it.

Yeah. You thought about the irradiators themselves, beaming that glow-in-the-dark cobalt 60 (the Canadian stuff) or cesium 137 (the U.S. leftovers). You remember, too, the story a couple years back of the Canadian cobalt from a U.S. hospital irradiator that started off in a Mexican scrap-metal yard before click-clicking its way across North America as recycled furniture steel. All the way north to a restaurant in Winnipeg — and you laugh a little nervously.

That was a close call!

But you read the newspapers. We're getting tougher on acid rain. The U.S. has almost agreed to dig up its Niagara waste-dumps. The dangerously leaded soil will be raised from Toronto's South Riverdale neighbourhood. Besides, the cancer disaster of Elliott Lake's uranium movers has gotten really sympathetic media and legislative reports of late.

So you're confident that *this* time, we'll do it right.

You savour the three cubes of chicken, honestly unable to tell the irradiated flesh from the other two. You claim that unique radiolytic products, URPs, the left-overs of irradiation, have no taste.

And you declare irradiated food fit for

FOOD IRRADIATION AND THE NUCLEAR INDUSTRY

by Nick Fillmore
and Anne Wordsworth

Canadian consumers, grist for the regulators and the industry lobbyists poised to fast-track Canada into the safe(r) new era of the peaceful atom.

But now, for a few moments, shift your point of view. You no longer taste-test for Ag Can. Instead, you are one of Canada's discriminating magazine readers. And you are about to find out how and why the regulators once again have shafted safety in the name of industrial *status quo*.

Let us start by saying that the Ag Can taste test really took place. The fact that no one who took the test could tell which piece of chicken had been irradiated has given the government one small piece of evidence to justify its decision to plan for substantial increases in the use of food irradiation in Canada. Canada already permits the use of irradiation on potatoes, onions, grains and spices, although no one is currently using the process. Irradiation of chicken to destroy salmonella is expected to be approved in the spring; fruit and vegetables would be next.

This planned greater use of food irradiation is the result of an aggressive no-holds-barred campaign by the nuclear industry world-wide to try to demonstrate the benefits of nuclear technology. The industry fears its existence is threatened because of the collapse of nuclear energy programs in most countries since Three Mile Island and Chernobyl. The industry wants to prove itself - and justify its survival - by showing the world the benefits of food irradiation.

An investigation by *This Magazine*

suggests that the food irradiation industry cannot survive on its own, but some governments - particularly the U. S. - may prop it up through heavy subsidies because their political objective (an increased nuclear arsenal) matches the economic objectives of the nuclear industry. Public-interest groups and the peace movement in the U.S. are enraged that the government is planning to use nuclear bomb waste material as fuel for food irradiation.

The Canadian nuclear industry needs a success story. It's facing a crisis because it hasn't sold a Candu reactor since 1982. Nor are there good prospects for future sales, although the industry still maintains a large infrastructure with the government underwriting most of the bill.

Not surprisingly, then, the push for food irradiation in Canada is being led by Atomic Energy of Canada Ltd. (AECL), a government-owned Crown corporation. AECL is the world's largest manufacturer of medical and food irradiators. It has designed and built seventy-one of the world's 132 irradiators, provides ninety per cent of the cobalt 60 and, together with the Armand Frappier Institute and the engineering firm Lavalin, is launching the country's first commercial food irradiator in Laval, Quebec. A six-million-dollar joint venture, the new company, Biopreserv Inc., intends to make a profit. In Richmond, B.C., the plans of QIX Facilities Corp. to build a private food irradiator now appear to be stalled because of financial problems. Other private companies, already involved in the irradiation of medical equipment, are gearing up in antici-

pation of wider use of food irradiation.

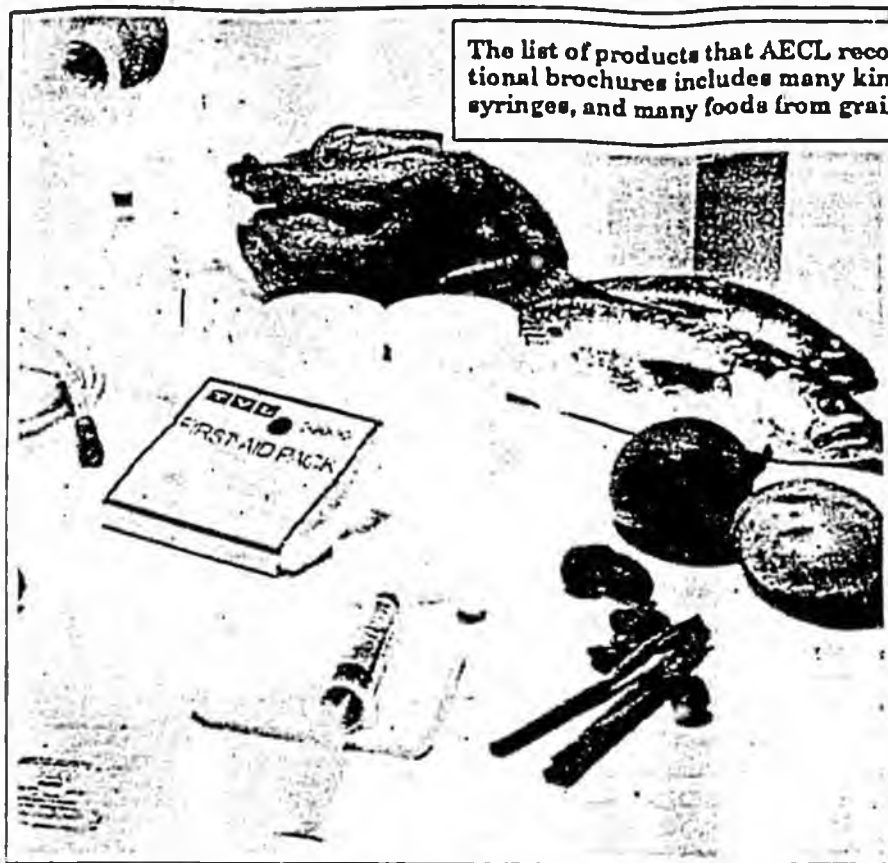
The AECL is also aggressively promoting the sale of its food irradiators around the world, especially to developing countries. It has already sold food irradiators to China and South Korea; sales to Jamaica and Thailand are believed to be nearing completion and the company is involved in feasibility studies in Chile, Mexico, Brazil and Egypt.

While capitalizing on food irradiation as much as it can, AECL is not the real force behind irradiation-for-all-the-nations. That task falls to the International Atomic Energy Agency (IAEA), a nuclear industry lobby whose specific mandate is to promote the peaceful uses of nuclear energy. For the past twenty years, the IAEA has been laying the groundwork to win wide approval for food irradiation. It has successfully manipulated how the safety of irradiation was decided in the international community, paving the way for countries like Canada to introduce their own legislation.

In recent years the IAEA has devoted a large part of its budget to the difficult task of trying to prove food irradiation beneficial. "By the early seventies, the scientific basis for the testing of food irradiation was in a total mess," noted Tony Webb of the London Food Commission, a British public-interest group that has published two reports critical of food irradiation. "That's when you find the IAEA stepping in to try and clean up the act."

Originally the nuclear industry had cast its lot with the U.S. Army. It start-

The list of products that AECL recommends for irradiation in its promotional brochures includes many kinds of medical supplies from gloves to syringes, and many foods from grains, to apples, to chicken to fish.



reviewed the expert committee's findings, showed how many adverse effects in studies had been downplayed and strongly criticized the committee's findings on potatoes, rice, onions and wheat. In one instance, a Japanese study which the committee used to approve the irradiation of potatoes showed that irradiated spuds affected a wide range of body organs in the test animals. Kosei concluded that irradiated potatoes should *not* be considered safe for human consumption. Similarly, another Japanese study, used by the committee as proof of the safety of irradiated rice, showed that the rice produced tumours in rats and mice. Again, Kosei considered a proper analysis of the study contradicted the committee's reassuring conclusions and "casts grave doubts on the reliability of international organizations such as FAO, IAEA and WHO."

Kathleen Tucker of the Health and Energy Institute in Washington, a public-interest group opposed to food irradiation, put it more bluntly: "The IAEA is not a public health agency. It is a promoter of nuclear technologies. When the IAEA declares that food irradiation is safe, it is analogous to the American Tobacco Institute claiming cigarette smoke has not been proven dangerous."

The safety debate has centred on whether the thirty-six or so "unique radiolytic products" (URPs) formed in food by irradiation can damage human health. Proponents argue that URPs and other food changes are party to any form of food preservation or preparation. Opponents maintain that not only do two wrongs not make a right, the irradiation-caused URPs should be regarded as *definite* human health risks. (It should be noted that food does *not* become radioactive at controlled irradiation doses.)

Their caution is based on two sets of evidence: animal test results, and one human study in India.

Scientific uncertainty over the extrapolation of animal data to the human population persists and will likely remain moot for decades. Human cancer risk assessments based on animal studies, however, have grown quite sophisticated and have earned widespread scientific and regulatory legitimacy. Organ damage, chromosome aberrations and offspring abnormalities are all regarded as signs of

ed its research in 1953 and spent more than fifty-one million dollars attempting to prove the safety of irradiated food, and, for a limited period, the U.S. permitted the army to use irradiated canned bacon. But a review of the animal testing revealed increased deaths in the offspring of rats, and the permit was revoked. Even though the army kept on trying, the real thrust moved to the IAEA.

The IAEA developed a strategy to rebuild the credibility of food irradiation by convincing prominent government and food industry officials from many countries to join IAEA's International Consultative Group. An IAEA document "Communications Guidelines for the Acceptance and Use of Food Irradiation" said the campaign is targeting government and non-government groups, the food industry and consumers. "The tactics are straight infiltration," said a person who has considerable knowledge of IAEA activities but asked not to be named. "They pick out key people and go for it." It's estimated that the IAEA is spending up to thirty per cent of its budget (which comes from the United Nations and twenty-three countries, including Canada) to get food irradiation approved.

Key to the IAEA's strategy was a care-

fully stage-managed review of the hundreds of studies on food irradiation. The IAEA must have realized that a review committee set up and managed by only the nuclear industry would not be trusted, so it somehow convinced two prestigious groups - the World Health Organization and the Food and Agriculture Agency - to set up a joint Expert Committee. Ten years later, in 1980, this committee, dominated by the IAEA, produced a report claiming food irradiation was safe and there was no need for further toxicological testing at the low doses that were being proposed.

The committee did not explain how it came to its conclusions. The report includes references to a number of studies, but there is no information on why many critical studies failed to influence their final decision. "There are two key weaknesses," an expert source told *This Magazine*. "One is a tendency to gloss over any experiments that show adverse effects. The other is to, stage by stage, water down the actual amount of vitamin loss of food that has been irradiated. The original papers say there is vitamin loss. In the review they talk about possible vitamin loss, and when you finally get to the expert committee, it's insignificant vitamin loss."

Dr. Takahashi Kosei of Japan, who

possible "pre-cancerous" developments. Though not consistently, many studies on test animals fed an irradiated diet have shown a variety of adverse effects, including premature death, chromosomal damage, kidney disease, testicular damage, reduced fertility and a decrease in offspring.

Recent studies in particular have failed to support the nuclear industry's food irradiation boosterism. A few years ago Raltech, the research arm of Ralston-Purina fed irradiated chicken to test animals, confident the results would condone the industry position. They did not. One study showed testicular tumours in mice. Another found that feeding irradiated chicken to fruit flies increased the rate of death of their offspring. And in another of the Raltech studies, researchers discovered that mice fed irradiated chicken had a greater incidence of kidney disease than their fellow mice eating non-irradiated chicken. Though the U.S. Food and Drug Administration (FDA, the agency empowered to regulate food irradiation in the U.S.) reviewed these studies and quibbled over the tumor count in one of them, the Ralston-Purina researchers tactfully concluded that "while no single finding from the study is highly illuminating, a collective assessment of study results argues against a definitive conclusion that the gamma-irradiated test material was free of toxic properties."

The most damaging research ever done was a study in India in the seventies. The Indian Department of Atomic Energy had applied to its government to use irradiation to preserve wheat. The Indian government believed irradiation was safe and was considering allowing its use. In an extreme departure from normal research practice, irradiated food was fed to malnourished children, instead of test animals. The sick children, all between the ages of two and five, were admitted to the hospital and put on a supervised diet of wheat and skim milk.

The researchers divided the children into three groups. One group was fed freshly irradiated wheat, another stored irradiated wheat and the third, unirradiated wheat. The group fed freshly irradiated wheat showed signs of chromosome

damage and developed a condition called polyploidy, an abnormal number of chromosomes. The second group, fed stored irradiated wheat, showed some signs of polyploidy, although not as severe as the first group. The children fed unirradiated wheat showed no signs of polyploidy at all. (As soon as the Indian researchers noticed these abnormalities, they stopped the experiment for ethical reasons.)

The study was published in the peer-reviewed *American Journal of Clinical Nutrition* in 1975. Dr. George Trisch, a prominent cancer researcher at Roswell Memorial Park Institute in Buffalo, said in an interview with *This Magazine* that the implications were clear, "The Indian study, which the industry would like to discredit showed eighty per cent of the children fed irradiated wheat had chromosome damage. When you stopped feeding them irradiated wheat, the chromosomes went back to normal. That indicates the wheat was very mutagenic. You could not design a better study to illustrate the mutagenicity of irradiated wheat." It is accepted in scientific research that most mutagenic materials also cause cancer.

Because the study was so damning of the nuclear industry's propaganda, the industry has struggled hard to discredit it. First off the mark was the Indian nuclear industry, Bhabha Atomic Research Centre. The government-appointed nuclear scientists reviewed the study and submitted a critical, but confidential, report to the Indian government. The National Institute for Nutrition, where the original study was done, then submitted a rebuttal of the criticisms made by the two investigators.

Although the review of the Indian study was confidential, copies nevertheless found their way to the IAEA in Vienna and to the U.S. FDA. The latter in particular exploited the review.

When the FDA issued its regulations on food irradiation in April 1986, it specifically rejected any concern raised by the Indian study on the basis that its findings had been dismissed by the Indian government review. Other proponents of food irradiation spread rumours that the study was fraudulent and that the institute had itself refuted it. In fact, the institute has stood by its study, and has done further animal experiments confirming the original results.

In its latest attempt to discredit the Indian study, the nuclear industry cites a study done in China where irradiated food was fed to humans, which claims there was no evidence of polyploidy. But it seems that this study hasn't been subject to review by scientific peers. "We cannot take completely seriously any study purported to demonstrate safety until it is published in a scientific journal," said Linda Pim, in a Pollution Probe presentation to the House of Commons committee that has been looking into food irradiation. "Much of the criticism of studies showing adverse health effects of irradiated food is unpublished, confidential and otherwise not fully accredited."

Back at home, the Canadian nuclear industry has embraced the IAEA's and FDA's food irradiation rhetoric and used it to maximum advantage. It has spent heavily in recent years

"Which irradiator is best for my needs?" asks an AECL brochure that promotes the use of gamma processing for medical and food uses. The brochure says AECL is the world's leading supplier of the technology, with over 65 commercial irradiators, over 600 research and clinical irradiators, and over 80 million curies of cobalt 60 in use in more than 50 countries.

"Which Irradiator is Best for My Needs?"

The brochure lists six and the...
 PROTECTING PARAMETERS
 The main reason for...
 irradiation is to...
 protect the...
 product from...
 spoilage...

CUSTOMER-SPECIFIC IRRADIATORS
 Your unique...
 requirements...
 can be...
 met by...
 our...
 irradiators...

THE DECISION
 Let us...
 help you...
 choose...
 the...
 best...
 irradiator...
 for...
 your...
 needs...



lobbying government and sending its executives across the country to eulogize irradiation to anyone who would listen, from business clubs to home economics' associations. On many occasions, however, AECL officials have misrepresented the true picture concerning food irradiation.

AECL claims in its reports and media statements that the Joint Expert Committee report is the final word on the safety of food irradiation. In a recent appearance before the Commons committee on food irradiation, Bruce Wilson, AECL director of marketing, parroted the IAEA false claim that the Indian study of malnourished children had been discredited.

AECL's main justification for increased use of food irradiation is to fight salmonella in chicken. And AECL officials gave the Commons committee misleading statistics on the number of deaths in Canada each year from salmonella poisoning. Paul O'Neill, president of AECL's food irradiation division, told the committee that "the number of deaths due to salmonella poisoning in Canada are estimated to exceed 750 per year." But this figure is wildly exaggerated. According to Statistics Canada, the actual number of recorded deaths has never been higher than nineteen in any single year since 1970, and while an unknown number of people may die of other complications involving salmonella, the total figure comes nowhere close to AECL's claim.

AECL officials repeat IAEA state-

ments exaggerating the amount of food irradiation going on in different countries. The IAEA distributes a list of twenty-two countries where food irradiation has been technically approved. The list is circulated to the Canadian media and the public by AECL and is used to suggest that these countries are doing extensive food irradiation. But Dr. Takahashi Kosei, who managed to obtain an IAEA survey, found that most of the twenty-two countries were not actually using the technology. The one country that uses it regularly, but only for fresh fruits and vegetables, is South Africa. About five other countries are making limited use of the technology for a very small part of their food supply.

The most vocal and persuasive spokesperson for the Canadian industry is Frank Fraser, vice-president of AECL's food irradiation division. The two other leading industry promoters have been AECL's Bruce Wilson, director of marketing for food irradiation and Dr. Theo Ouwerkerk, who recently left AECL to start his own consulting company in the food irradiation field, Gamma Processing International.

Fraser - an engineer - is zealous on the benefits of food irradiation, claiming that it is absolutely safe. In December 1986, he told the Commons committee that even if a piece of food is irradiated twice it "is not going to cause any toxicological problems at all." He has so much faith in the technology, he irradiates his family's own potatoes.

Just as the IAEA has garnered interna-

tional legitimacy through its association with the WHO and the FAO, AECL capped its PR strategy by winning the support of the 160,000-member Consumers' Association of Canada (CAC). Fraser and Ouwerkerk spent an evening in 1981 explaining the benefits of food irradiation to the CAC Food Policy Committee and apparently were very persuasive. "It didn't take very long to convince this group," wrote committee chairperson Marilyn Young "that gamma processing could indeed be a valuable tool for the food industry and a benefit to consumers world-wide."

Young prepared resolutions supporting food irradiation that were passed at the 1982 association convention. At the time, food irradiation was almost completely unknown to CAC members, and the prospects of salmonella-free chicken or sproutless onions and potatoes seemed appropriately pro-consumer. Young now speaks at international forums championing food irradiation, though, as she admitted to a conference at the International Centre for Food Irradiation in the Netherlands, she "honestly cannot assess much of the data, nor can other consumers. We must rely on you people to be our health protectors."

Some members of the association are also disturbed by the endorsement given food irradiation. CAC member Hilda Brister is planning resolutions to overturn the food irradiation decision at the convention in Ottawa in mid-June. "I was at the convention in 1982 when it was brought up and nobody knew much about it. I thought we should have waited," Brister said. "I feel we're endangering our health if irradiated food gets on the market and we eat it."

The food irradiation lobby has also been very persuasive in its dealing with the federal government. Seven government departments have joined AECL to create an Inter-Department Committee on Food Irradiation with the goal of bringing together key people who can help promote food irradiation technology. "We are not simply talking about a business of selling food irradiators," said Susan Mills, a food irradiation research officer with the Science Council of



This mobile irradiator was developed by AECL in the 1960s. In Quebec at about the same time, another unit was built to stop potatoes from sprouting during an experimental irradiation program. Officials said the experiment failed because of heavy water content in the potatoes. Still, thousands of pounds of irradiated potatoes were distributed to consumers. (Inset: Irradiated potatoes contrasted with non-irradiated spuds.)

The logo that is proposed for irradiated food is very similar to the logo already used by the U.S. Environmental Protection Agency

Canada who is also on the committee, "we're talking about selling a whole export industry of a food-processing nature, whereby people or companies with complementary goods and services can be gathered together in consortia around AECL and AECL's technology. This will open up a whole export industry for Canadian firms."

The health question is not on the agenda because, according to Dr. Sol Gunner, a committee member and head of the Health and Welfare division responsible for national food safety, the department accepts the safety verdict of the Joint Expert Committee. As a result of IAEA's lobbying, the government is expected to make changes to legislation this spring that will allow for the full development of this technology by removing food irradiation from the "additive" category and making it a "process."

This is an important distinction. U.S. legislation in 1958, quickly copied by Canada, made it mandatory that all food additives undergo safety testing and classified irradiation as an additive. This legislation was intended to protect the public from the quick introduction of new, perhaps unsafe food additives. The food irradiation industry in both countries has made it clear that these requirements are blocking the way to more widespread use of the technology.

By redesignating food irradiation a process, Health and Welfare Canada appears to agree with the IAEA's contention that irradiation has been proven safe with no new toxicological tests necessary, even though the department has conducted none of its own research on food irradiation. Under the proposed regulations, the only information required by Health and Welfare would be the amount of radiation and the conditions under which it would be used. That this so closely resembles the industry demand could reflect the presence of Dr. Norman Tape on the Inter-Department Committee. Besides representing Agriculture Canada, Dr. Tape is also chairperson of IAEA's world-wide Consultation Committee on Food Irradiation.

The United States is moving even more quickly than Canada to introduce food irradiation. Because Canada



brings in so much food from the U.S., the first irradiated foods that Canadians are likely to eat will be American imports. The U.S. is also bound to put pressure on Canada to conform to U.S. standards.

President Ronald Reagan clearly had a goal in mind when he named Margaret Heckler as Secretary of Health and Human Services in 1980. Responsible for the Food and Drug Administration, Heckler had been a member of Congress representing a district that included the U.S. Army Natick Research Laboratory outside Boston, where much of the research on food irradiation was done. She was a long-time supporter of food irradiation and critics say she pledged she would sign the authorization for the technology before her term in office was up.

Under Heckler, the FDA disregarded the traditional safety testing procedures when it decided to expand the uses of food irradiation. Although it has not yet changed irradiation from an additive to a process, it has eliminated the requirement for animal testing under its new rules on food irradiation. Industries who want to use food irradiation no longer have to support their application with studies proving the safety of the irradiated food.

The FDA also ignored all the studies that showed adverse health effects in its evaluation of food irradiation. Although it rejected most of the over 400 studies on the process as flawed, of the sixty-nine that were good enough for review, almost half showed adverse health effects. All these negative studies were thrown out by the FDA and deemed to be deficient in the final regulations. It used only five studies showing no adverse effects to support its position that food irradiation was safe. Heckler kept her promise by signing the authori-

zation for increased use of food irradiation on her last day in office. Ralph Nader's Public Citizen's Health Research Group called the FDA's actions "reckless and illegal."

Robert Alvarez of the Environmental Policy Institute, a public-interest group in Washington, says that food irradiation was pushed through because the Reagan administration was concerned about the declining popularity of the nuclear industry and feared that the same feelings might be held about the nuclear weapons program. Food irradiation would be the industry's much-needed success story replacing the still dubiously effective radiotherapy of cancer tumors as the peaceful atom's good news.

Moreover, Alvarez says the latest push to commercialize food irradiation is directly linked to U.S. plans to embark on a huge build-up of nuclear weapons, a troublesome waste product of which is cesium 137. (Cesium 137 has a very long half-life of thirty years which means it would take approximately three hundred years before it becomes harmless.) Alvarez claims the government will give the food irradiation industry huge subsidies to create an artificial demand so the military can get rid of the cesium 137:

The U.S. military, through the Department of Energy (DOE) is pumping ten million dollars into food irradiation with the goal of having products appear on store shelves within two years. Under DOE's Byproducts Utilization Program, cesium 137 from the Hanford nuclear waste storage facility will be used to fuel five regional test-market food irradiators - in Washington state, Hawaii, Oklahoma, Florida and California. In a program that will be heavily subsidized by DOE, the government is cost-sharing with local sponsors in each

of the five states. Hawaii may be the first to go into production - irradiating up to twenty million pounds of papaya per year for distribution in North America. For areas that can't support year-round food irradiation, DOE has built a \$1.2 million transportable irradiator that will be used to irradiate seasonal crops.

The U.S. government and the food-irradiation lobby have been prodding the food industry to begin plans to introduce the technology. Individual companies, however, have been reluctant to be

identified with the technology, fearing a consumer backlash and possible boycott. Instead, about thirty companies, radiation firms and food trade associations in the U.S. have joined together to create the Coalition for Food Irradiation. (A similar group has been set up in Canada.) The coalition prepares pamphlets, meets with journalists, particularly food editors, and talks to health workers and officials.

The first irradiated food for commercial sale in the U.S. went on sale in Miami last September. Lorenzo's Farmers Market was chosen as a test site to sell mangoes irradiated in Puerto Rico after

two national supermarket chains turned down the offer. An Israeli marketing firm was finally convinced to market the product under the name "Pango Mango." Lorenzo's sold the first order of twenty cases of mangoes in four days amid the crush of TV cameras, lights and reporters. The company ordered twenty more cases. "The people who are buying them are mango lovers," David Lorenzo said. "It doesn't matter to them if they are irradiated or not. If they look good, taste good and smell good, they will buy them and come back for more."

Despite the economically boisterous support of the U.S. government, the nu-

ADDITIONAL PROBLEMS ASSOCIATED WITH FOOD IRRADIATION

Vitamin Loss - Irradiation can cause nutritional losses in food by destroying many vitamins, particularly vitamins A, some Bs, C and E. The extent depends on the vitamins, the type of food and the radiation dose. If the food is cooked or canned, even greater vitamin losses occur.

Destruction of Bacteria - Although irradiation may kill some disease-causing bacteria it does not necessarily kill all bacteria in a food. In chicken, irradiation can kill the salmonella bacteria while the bacteria that causes botulism survives. Dr. Venket Rao, a nutritionist at the University of Toronto, says that we may be replacing one type of food poisoning with another.

Mutations - Dr. Rao also says that irradiation of food "may induce genetic changes and produce bacteria through mutation that have a higher resistance to any kind of destruction."

Aflatoxins - Aflatoxins are very powerful, naturally occurring cancer-causing agents, produced by some types of fungus associated with grains. Several studies have shown that aflatoxins are produced in greater quantities in irradiated food.

Changes in Food - If doses of irradiation are not carefully applied, changes in the colour, texture and flavour of food may be apparent. These off-flavours have been described as a "wet dog" smell in meat, "musty" or "nuuy" tastes in fats, and "scorched" or "chalky" flavours in milk.

Re-contamination - If food is not properly sealed, it can be recontaminated, undermining its primary purpose.

Lack of Monitoring - there is no practical test to determine whether food has been irradiated. This has already caused problems in other coun-

tries. In Britain where food irradiation is still banned, a shipment of prawns from Malaysia was found to be contaminated at dockside. This import company shipped the prawns across the channel to the Netherlands, where they were irradiated. Then the prawns were shipped back to England where they were sold to restaurants and caterers. The incident was only later discovered by accident. Tony Webb, who has done an investigation of food irradiation for the London Food Commission, said he believes this practice of concealing bacterial contamination by use of irradiation is more widespread than governments realize. Canada just as easily as Britain could have been the victim.

Increased Environmental Hazards - Irradiation plants containing large amounts of radioactive cobalt 60 are likely to be located in populated areas, near food growing areas and important watersheds. Trucks hauling large amounts of this deadly substance would pass through cities and the countryside.

Potential for Serious Accidents - In the U.S. there have already been several accidents at plants using irradiators for medical sterilization. One accident involved a worker being exposed to an almost fatal dose of radiation when he opened the door to the irradiation chamber while the gamma radiation source was exposed. He worked for a company called Radiation Technology Inc., in Rockaway, New Jersey. The Nuclear Regulatory Commission closed the plant in June 1986 and requested a criminal investigation.

Another American company, International Neutronics Inc., in Dover, New Jersey, has been indicted for trying to cover up a spill of radioactive water from its plant by flushing it down a drain and into the sewer system. The cleanup is estimated to cost two million dollars.

clear industry has yet to prove that food irradiation is either needed or economical. Indeed, according to Ron Krystynak, an economist in the Food Regulation Analysis Section of Agriculture Canada, food irradiation in Canada may never be economical. "The problem in Canada is the economies of scale," Krystynak said in an interview. "There is a wide distribution of agriculture across the country and small quantities. The production is not large enough to justify the cost of irradiation." As for ridding chicken and fish of unwanted bacteria, "there are only a couple of poultry processors who are large enough to have their own irradiators. The other processors are so small they couldn't afford it." Chicken irradiation would also add to the cost of a modestly priced product, and most consumers would be unwilling to pay more for the process.

Krystynak's study, believed to be the only one of its kind in Canada, agrees with another conducted in California in the early seventies that food irradiation would be uneconomical for fresh fruit, like strawberries. Production is seasonal and regional and, according to Krystynak, there are new technologies being developed to preserve foods that would be cheaper and free of the problems associated with food irradiation.

There are also doubts that AECL can make substantial profits from its overseas sales. A recent Science Council of Canada study estimates that the world food irradiation market is worth only \$250 million to 1990 - not a lot when spread among several competing countries. AECL can expect very tough competition from the U.S., which is prepared to sell its cesium 137 irradiators at bargain-basement prices in order to end Canada's near-monopoly in the irradiation business.

It's also likely that the Canadian government will spend more money on subsidies than AECL will make selling food irradiators to developing countries. AECL's export program is already being heavily subsidized by the Canadian International Development Agency (CIDA), the government agency with the task of disbursing official foreign aid. CIDA has spent more than \$2.3 million to date paying for irradiation research and feasibility studies in several countries. If irradiators are sold to Jamaica and Thailand, as planned, CIDA will likely heavily subsidize their purchase.

Developing countries became interested in irradiators when Canada and the

U.S. banned the use of the fumigant ethylene dibromide (EDB) two years ago because it was found to cause cancer. These countries, desperately looking for a substitute to kill insects in the grains and spices they export, have been receptive to the prospect of using food irradiators. The irony for Canadians who do not want irradiated food in their country is that the irradiators in developing countries are likely to be used on food that will be sent back to Canada.

Food irradiation critics thus take exception to nuclear industry claims that food irradiators will help solve the problems of world poverty and starvation. "It's pure fantasy to argue that irradiation will supply food for the poor and starving," says Denis Mosgofian, director of the National Coalition to Stop Food Irradiation, based in San Francisco. "The first foods to be irradiated will be pork, chicken, frogs legs, shrimp, papayas, mangoes and strawberries. Is the public to believe that these products are available in areas where there is drought and hunger? It is the chronically impoverished who perish from hunger, and such impoverishment doesn't occur overnight. Poverty is the product of long-term economic and political denial. It is not simply the result of a lack of food."

The federal government is gauging public reaction to food irradiation by keeping a close watch on the deliberations of the all-party House of Commons committee that has been holding sessions in Ottawa. It's using its majority on the committee to control its activities. Instead of discussing the real issues of food irradiation - safety and economics - the committee is looking primarily at how irradiated foods should be labelled. The government clearly wants to have wide use of food irradiation technology in Canada but it also wants to avoid any public backlash that might be brewing. Though Ottawa was ready to introduce changes last year to allow for much wider use of food irradiation, for instance, it changed its mind because of the Chernobyl accident and because MPs were receiving dozens of letters from people expressing their opposition to food irradiation.

But since then, the anti-food irradiation movement has grown. Now, several organizations - including the Coalition to Stop Food Irradiation in Vancouver, the Nuclear Awareness Project in Toronto, Consumers United to Stop

Food Irradiation in London, Ontario and the Canadian Coalition for Nuclear Responsibility - are planning to fight the passing of government legislation.

The nuclear lobby and the government don't want the word "irradiated," or anything like it, to appear on irradiated foods. Instead the government is proposing that packaging carry a green symbol that resembles a flower, a symbol that is very close to the logo of the U.S. Environmental Protection Agency. It would be accompanied by the word "Radura," derived from the statement "durability enhanced by radiation." The government has said more descriptive wording will be added, but the final version has not yet been decided.

Marilyn Young, chairperson of the CAC's Food Policy Committee, supports the industry proposal and strongly believes that the term irradiated should not be used. "Let's not confuse it with a name that associates this process with the much disliked and distrusted nuclear industry," she told a conference on food irradiation in Vienna, saying what is needed is a symbol that "is not to alert or alarm but rather as a piece of information." (The Consumers' Association of Canada, whose views correspond with government policy, have been the only consumer group consulted by the government in its deliberations over labelling.)

"If the government allows AECL and the rest of the industry to get away with euphemistic phrases and meaningless symbols to satisfy labelling requirements," said David Poch, a lawyer for Energy Probe in Toronto, "they are doing a disservice to the public who should be allowed to choose what to eat as we do with food additives. The fact that they are coining new expressions to conceal irradiation is an admission by the government and industry that the public are not going to want to eat irradiated food."

The U.S. has already adopted the Radura flower symbol with "treated by irradiation" written across it, though the words will be dropped from the symbol in April 1988 - coinciding with the expected first appearance of irradiated food on the U.S. market!

The proponents of irradiated food have good reason to oppose any appearance of the word irradiated on food products. Market research shows there is strong public resistance to buying irradiated foods. A 1984 Kidder Peabody survey in the U.S. reported that only twenty-eight per cent of the people surveyed would

buy irradiated food even if it were offered at the same cost as other food. Marketing strategists, however, have already recommended a plan to overcome consumer resistance based on other tests showing that when the benefits of irradiation are emphasized, and the technology is not discussed, there is much greater consumer acceptance. Companies thinking of marketing irradiated food are also being told to emphasize the benefits of irradiated foods as an alternative to foods treated with chemicals, an approach that critics say is dishonest because most irradiated foods will also be chemically treated.

It is clear that neither the food industry nor the public want food irradiation. The case for it has been cooked up by the IAEA and AECL. To survive in Canada the technology will have to be heavily subsidized by the government. So what's really behind this; why are governments supporting such a boondoggle?

The power brokers in Washington and Ottawa couldn't care less if our chicken is zapped with irradiation. What they're concerned about is the survival of peaceful nuclear energy because it provides a cover and a support system for the nuclear weapons industry.

The politicians believe that the public will not so quickly challenge the presence of nuclear weapons if peaceful uses of the technology, like food irradiation, can be shown to be beneficial. On a practical level, governments support nuclear energy because it benefits the weapons industry. Universities that teach the so-called peaceful uses of nuclear energy also turn out scientists who work in nuclear weaponry. The same companies that provide facilities and equipment for peaceful nuclear energy also provide similar supplies for weapons programs. The same mines produce uranium for both nuclear energy and nuclear weapons. And the peaceful nuclear reactors - the Candu in particular - produce many deadly substances that can be of vital use in nuclear weapons production.

The Canadian government, at the highest level, probably supports food irradiation because it indirectly provides support for the U.S. and NATO nuclear weapons that defend Canadian territory.

Some peace activists believe we'll never rid the world of nuclear weapons until the so-called peaceful atom is eliminated. Food irradiation seems like a

good place to start. Its use should concern health critics, nutritionists, health workers, labour leaders, environmentalists and the anti-nuclear and peace movements. The nuclear industry should not be allowed to impose an unwanted, dangerous technology on the world that appears to have no benefit other than to itself. If allowed to make it on its own in the commercial marketplace, food irradiation, just like the nuclear-powered airplane or the nuclear-powered toaster,

would already be a footnote in the history books. TM

Nick Fillmore is This Magazine's investigative editor. Anne Wordsworth, a former researcher with Pollution Probe in Toronto, is an environmental researcher with the Ontario NDP. We would like to thank Ron Labonté, a community health activist and educator, for his help in editing this article.

FIGHTING FOOD IRRADIATION

The following organizations are active in the fight against food irradiation:

Canadian Coalition to Stop Food Irradiation
P.O. Box 190
White Rock, B.C.
V4B 5C6
(604) 574-0527

Canadian Health Food Assn.
6252 Fraser Street
Vancouver, B.C.
V5W 3A1
(604) 324-2121

London Consumers Health Group
1381 Rideau Gate
London, Ontario
NOM 2A0
(519) 438-5801

Consumers United to Stop Food Irradiation
R.R. #1
Ilderton, Ontario
NOM 2A0
(519) 666-0194

Nuclear Awareness Project
730 Bathurst Street
Toronto Ontario
M5S 2R4
(416) 537-0438

International Institute of Concern for Public Health
67 Mowat Avenue, Suite 343
Toronto, Ontario
M6K 3E3
(416) 533-7351

Assn. of Concerned Citizens for Preventative Medicine
415B McArthur Avenue
Ottawa, Ontario
K1K 1G3
(613) 749-1002

Canadian Coalition for Nuclear Responsibility
P.O. Box 236
Snowdon St. P.O.
Montreal, Quebec
H3X 3T4
(514) 842-1471

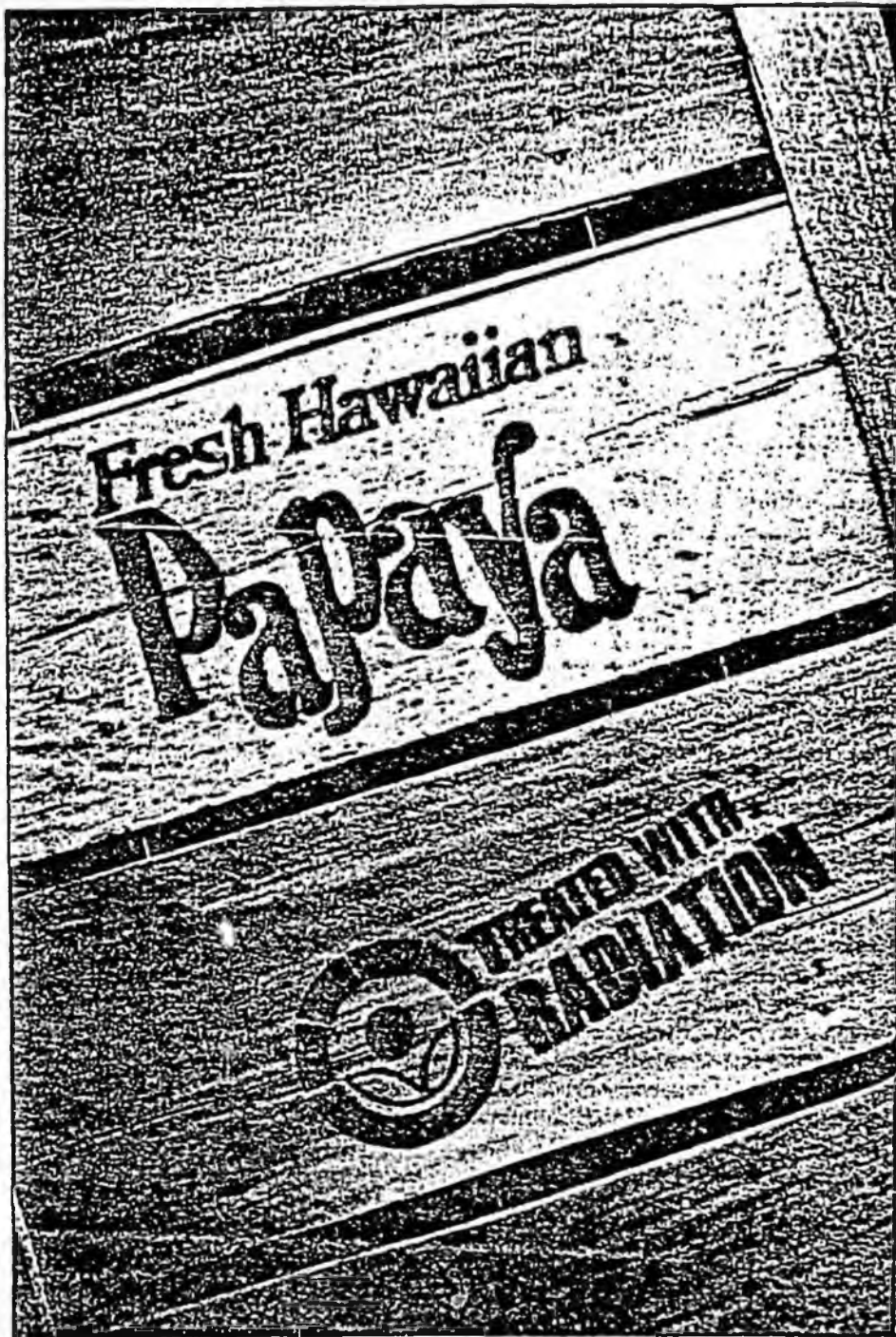
National Coalition to Stop Food Irradiation
P.O. Box 590 - 488
San Francisco, California
94159 U.S.A.
(415) 566-2734

Health and Energy Institute
236 Massachusetts Ave. NE
Washington, D.C.
20002 U.S.A.
(202) 543-1070

Health Research Group
P.O. Box 19404
Washington, D.C.
20036 U.S.A.
(202) 872-0320

Sever since the United States government embarked on an "atoms for peace" program after World War II, it has encouraged the use of irradiation as a way of preserving food. Bombarding food with radioactivity prolongs shelf life by killing the organisms that damage food: insects, mold, bacteria. It also brings up unsettling images for consumers, which is one reason the food industry has been reluctant to try it. What the irradiation hopefuls have needed is a workable crop, an agreeable industry, and a receptive community to house an irradiator. They may have found all three in Hawaii, where a vigorous campaign to push food irradiation has centered on a peculiar yolk-colored fruit that tastes somewhere between a cantaloupe and a peach. If all goes according to the government's plan, the papaya could become the first irradiated whole food to appear in American supermarkets.

Why the papaya? Why not something a little more ordinary, like potatoes, or maybe wheat? Twenty years ago, potatoes and wheat were in fact the first foods sanctioned by the Food and Drug Administration (FDA) for irradiation. On April 18, 1986, the agency went a giant step further and extended its approval of



Trouble in Paradise

By Kirk Johnson
Photo by Meg Landsman



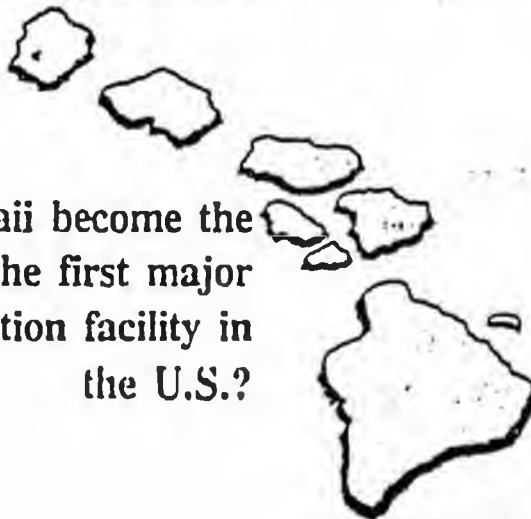
irradiation to all fruits and vegetables. You can't find these irradiated commodities in any store today because they aren't being marketed. At least not yet. The reason? "Economics," says one industry veteran. "Irradiation is a very expensive process, and as long as we have other ways to ensure a reasonable shelf life, we'll use them."

Economics is one reason attention has turned to the papaya. Its tropical growing season generates a year-round supply of fruit, and the more food you move through an irradiator, the lower the cost per pound of treatment.

There is also the issue of pest control. Hawaii is the home of three species of fruit fly with an affinity for ripe papaya. For years, the papaya industry relied on the fungicide ethylene dibromide (EDB) to disinfect the fruit. But when EDB was banned in 1983 after it was found to cause cancer, the industry faced the prospect of having its papayas denied entry to the U.S. mainland and other countries that do not have these fruit flies—and don't want them. Low-dose irradiation emerged as one alternative to EDB. The dose isn't strong enough to kill the insects, but it sterilizes them so they cannot reproduce once they leave the islands.

The U.S. Department of Energy

Will Hawaii become the
site of the first major
food irradiation facility in
the U.S.?



(DOE) likes irradiation because it would help get rid of radioactive wastes. Cesium-137, the radioactive heart of an irradiation facility, is a byproduct of nuclear weapons production. The government has been searching for ways to manage these wastes, and as much as some states have recoiled at the thought of burying the stuff on their turf, there has been considerable support within DOE for considering nuclear waste as a valuable national resource.

Why? Food irradiation puts weapons waste to what DOE considers a constructive use, and that means more than just food preservation. DOE is dangling before Hawaii the inducement of a six-year supply of free cesium-137—nearly \$3 million worth—after which the material would be leased from the federal government. If the state accepts the offer, a byproduct of nuclear weapons production would create revenue for the U.S. Treasury. Moreover, since cesium-137 accounts for a hefty 55 percent of the radioactivity in the nation's nuclear weapons waste bin, food irradiation would cut DOE's waste management tasks by half. Finally, the process of extracting cesium-137 from nuclear waste generates bomb-grade plutonium, which is needed to arm the roughly 17,000 nuclear warheads that the Reagan Administration has requested for the next six to seven years. All of these factors help explain why, for the past two decades, DOE has been pulling cesium-137 from its growing mound of nuclear weapons waste and saving it for food irradiation.

The state of Hawaii is thumbs-up on irradiation. In fact, former Governor George Ariyoshi liked the idea so much that he asked the state legislature for \$2.5 million to build a facility on the island of Hawaii, where the papaya industry is based. The more cautious legislature voted instead to spend \$200,000 for a study to investigate the technical and economic feasibility of such a facility. The state circulated a request for proposals to conduct a feasibility study, and from the seven respondents selected an internationally known engineering and consulting firm by the name of CH₂M Hill.

When news of the state's plans began to circulate around the island, the environmental community was the most alarmed. The front page of the environmentalist newspaper *Save Hawaii* was blanketed by a long story on the dangers of irradiation. The concerns


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ranged from the possibility of environmental contamination in the event of a leak of radioactive material to the health hazards of eating irradiated food. Kathy Dorn was one of many Hawaiians who first learned about irradiation from the *Save Hawaii* piece. Dorn, a gardener, musician, and mother, had always been proud that Hawaii was the first region in the United States to declare itself a nuclear-free zone, despite a last-minute exemption for agricultural uses. She was upset that the state seemed unconcerned about the potential for danger, and, she says, when she realized how closely food irradiation was tied to nuclear weapons production, "I was angry for a fight." Dorn went on to help organize a group called the East Hawaii Coalition to Stop Food Irradiation.

The papaya industry has an obvious stake in the issue, and the recommendations of its trade association carry substantial weight with state decision-makers. When the Hawaii Papaya Industry Association held its 22nd annual meeting last September, it was a logical place for all the interested parties to converge.

I happened to be vacationing in Hawaii at the time, lured by the promise of black sand beaches and 6,153 miles of separation from my office phone. But after several days and nights of steady rain, I was grateful for the distraction of a story to cover. I spent four days crisscrossing the little city of Hilo on Hawaii's eastern coast, sitting in on meetings, questioning officials, listening to people's reaction to a plan that seemed quietly out of step with Hawaii's history as an earth-loving land. I drove away from the city feeling that what is transpiring there is significant not only because it is the closest we have come to irradiated food-stuffs. I had also watched a preview of a drama that will play itself out in every community that wrestles with the uncertain risks and equally unclear benefits of food irradiation.

Thursday morning, September 25



Hilo was drying after yet another night of showers, and a Japanese groundskeeper was raking the parking lot leaf by leaf when I drove up to the Naniloa Hotel. It was an unlikely spot for a press conference. With one side of this resort hotel protected by stately banyan trees, the other open to gently rolling surf, the scenery beckoned me from thoughts of nuclear disaster.

In one corner of the lobby, a trio sat facing a ring of reporters. Denis Mosgofian, a lithographer by trade, told the gathering that he had come to the irradiation issue through his job as a health and safety officer to his industry. He had learned about mishaps at several government and commercial facilities used to irradiate (and thus sterilize) disposable medical instruments—miscues that had left several workers hospitalized with acute radiation sickness. The more he investigated food irradiation, the more concerned he became and the more he felt compelled to inspire others to stop a bad idea dead in its tracks. Mosgofian now heads the National Coalition to Stop Food Irradiation, a San Francisco-based collection of fifty-five national, state, and local organizations coast to coast.

In Santa Cruz, California, the campaign to stop irradiation is headed by Food Irradiation Response, an organization that successfully lobbied to establish Santa Cruz as the first county in the nation to adopt irradiation labeling laws more stringent than FDA's. The director of the group, a veteran consumer activist by the name of Brion Sprinsock, had flown in to appear with Mosgofian. Together, the two men explained their objections to irradiation in the smooth, sure cadence of speakers who have laid out their arguments many times before. They had four major concerns:

- The impact on the environment. Bringing in fresh cesium-137 from the mainland and returning the spent isotope would involve transporting radioactive material over Hawaii's roadways. If an accident along the way caused a leak, this toxic material might easily contaminate the groundwater, since the soil on Hawaii is porous lava, cesium-137 is water-soluble, and the eastern half of the island, where the irradiation facility would be built, has one of the highest annual rainfall rates in the world.

Mosgofian suggested that the track record of existing irradiation facilities offers little assurance that sophisticated containment systems will not fail or be deliberately overridden. After leaks at two such facilities (International Nutronics Inc. of Dover, N.J., and Isomedix Co of Parsippany, N.J.), workers were instructed by plant managers to pour radioactive water down bathroom drains and toilets, where it was released into public sewer systems. In another incident, the Radiation Technology plant in Rockaway N.J., was shut down by the Nuclear Regulatory Commission (NRC) because the firm had repeatedly dismantled a safe

ty interlock device that prevents employee access to the radioactive isotope. The closure order said that the NRC "no longer has reasonable assurance... that the public health and safety, including the safety of the Licensee's employees, will be protected." The Department of Energy is now paying the former head of Radiation Technology, Dr. Martin Welt, for technical advice on Hawaii's papaya irradiation facility.

•The impact on the food itself. Showering food with radioactivity doesn't make it radioactive. But these fast-moving gamma rays rearrange the configuration of the food molecules they strike, producing new substances known as radiolytic products. Are these radiolytic products safe to eat? The FDA went about answering that question by examining some 441 studies of irradiated food. According to a 1982 internal FDA memo, by the time the agency had whittled the list to sixty-nine studies for in-depth review, only five studies "appeared to support safety." This was the agency's basis for extending its approval of irradiation to all produce in April, 1986.

Other evidence suggests that radiolytic products may pose a serious health threat, most notably by inducing cancer. In the only human study of irradiated food reported in the scientific literature, children in India who were fed freshly irradiated wheat developed abnormal cells associated with leukemia, a form of cancer. When alarmed researchers halted the study, the cells returned to normal. In 1980, the FDA itself published a study reporting that irradiation produces dramatic increases in aflatoxin, a carcinogenic mold estimated to be one thousand times more potent than EDB. Nuclear physicist and physician John Gofman, whose expertise dates back to his work on the Manhattan Project, wrote to former Health and Human Services Secretary Margaret Heckler, "Our ignorance about these foreign compounds [radiolytic products] makes it simply a fraud to tell the public that 'we know' irradiated foods would be safe to eat." Gofman went on to say that because cancer has a long latency period, only a thirty-year study of at least 200,000 people would indicate whether irradiated food is safe for human consumption. That kind of study, he said, "simply has not been done."

In addition to adding new chemicals to food, irradiation destroys existing ones. "Radiation can't discriminate between the reproductive cells of a fruit fly and a molecule of vitamin C." Mosgofian told the reporters, citing studies showing how

irradiated fruits had lower vitamin levels. When the FDA decided to allow broad-scale fruit and vegetable irradiation, it announced, "Destruction of nutrients is not a concern in this rulemaking."

•The impact on the food industry. Will consumers buy irradiated food? In a word, Sprinsock promised, no. A 1984 study prepared by the Department of Energy found that 84 percent of the respondents in a national telephone survey expressed major or minor concern about the idea of food irradiation, or were undecided. The pollsters suspected that such reservations stemmed from a lack of information, so they recited some of

"Hawaii is caught between a rock and a hard place—between DOE, which is pushing for irradiation, and consumers, who are almost certain to reject it," said Sprinsock.

the benefits of food irradiation and asked them again for their views. This time, 79 percent voiced major or minor concerns or indecision. Sprinsock said that this and other surveys suggest that most Americans are unwilling to accept the irradiation concept, and that their feelings cannot be changed through education. "Hawaii is being caught between a rock and a hard place—between DOE, which is pushing for irradiation, and consumers, who are almost certain to reject it," he said.

•Labeling. If an irradiator were built on Hawaii and irradiated papayas sent to market, the fruit would be labeled to distinguish it from untreated papayas. But there's a catch—several catches, actually. For fruits, vegetables, grains, and other so-called whole foods like the papaya, FDA regulations require labeling with a flower-like symbol known as the "radura," along with the words "treated with radiation." Sprinsock thinks the flower symbol is a misleading euphemism that glosses over the potential danger of irradiation. What's more, the wording requirement is due to expire on April 18, 1988, leaving consumers no clue but the symbol that a food has been irradiated. Finally, as the law now stands, processed foods that contain irradiated ingredients do not have to be labeled. Critics see FDA's labeling laws as an attempt to circumvent almost certain consumer rejection, and as a denial of everyone's right to know about a processing technique that, unlike canning or freez-

ing, leaves no visible clues.

While Mosgofian and Sprinsock were impressive, it was Kathy Dorn who revealed the most startling news of the day. Dorn released government documents detailing an accident at an experimental food irradiator on the nearby island of Oahu. The state-run facility had been built in 1967 to test for the effects of irradiation on tropical fruit.

In 1967, officials there received a shipment of cobalt-60, another radioactive source often used in irradiators. The cobalt was housed inside a defective steel capsule that was already leaking by the time it arrived on-site. When officials

decided to return the capsule to the mainland, most of the leaking cobalt was confined to a pool of water that was used to shield workers from the radioactivity. But when a lead shipping cask was lowered through the roof to receive the defective capsule, it too became contaminated with radioactive water. As the cask was raised out of the building, the water dripped onto the roof, where subsequent rains carried it through a drainspout and onto a grassy area outside the building. There the radioactivity remained undetected for twelve years until a consultant toured the area with a geiger counter in 1979. Work crews ripped out fifty tons of radioactive steel, concrete, and earth from the facility for burial at a DOE disposal site in Hanford, Washington, and the plant was permanently shut down.

Dorn said a person standing one meter away from the contaminated lawn would have unknowingly received the equivalent of seven and a half chest x-rays an hour in 1968 and two chest x-rays an hour in 1980, when the strength of the radiation had declined. In her mind, the 1968 spill was just one step from disaster. Had the radioactive fuel been water-soluble cesium-137 instead of the relatively insoluble cobalt-60, the leak would have trickled into the ground, inevitably leading to increased risks of cancer, birth defects, and immune system problems. What bothered Dorn was the apparent reluctance of state officials to draw lessons from the 1968 accident. "The earlier facility was built with the same

confident assurances that we're hearing now about the new facility: fail-safe design, a new era in food processing," she said. "That project was an utter and complete failure. There's no need to repeat this scenario with a much more dangerous isotope."

The timing of the press conference was strategic. Held the day before the papaya industry meeting, it would ensure that papaya growers would read about the accident over their morning coffee. The growers were not to be won over so easily—for one thing, they would be hearing quite a different set of facts from the other side—but the press conference gave the activists a brief moment in the sun.

Next on the agenda: the Hawaii Medical Association was holding a dinner meeting that night to talk about food irradiation. The group had invited Mosgofian and Sprinsock to present their views along with Dr. Garth Tingey, an engineer under contract to the Department of Energy. By reputation, Tingey was as utterly convinced of the need for food irradiation as the activists were opposed to it. His job was to get three food irradiators across the country onto the drawing board. Hawaii's was the first. It promised to be quite a show.

Thursday night, September 25

I had not been invited to the doctors' meeting, which was slated for a Japanese restaurant in the center of town. When my phone calls to the Hawaii Medical Association failed to reach the president of the group, I decided to place my faith in the legendary graciousness of the islands. Sure enough, no one so much as lifted a chopstick as I approached the doorway of the room where two dozen physicians were attending to sushi and spareribs.

After dinner, Mosgofian and Sprinsock led off by urging the physicians to consider irradiated papayas in terms of costs and benefits. Apart from sterile fruit flies, they asked, what does Hawaii gain by having an irradiator? And what might it lose, when the safety record of existing irradiation facilities is poor, when there has already been one accident on the islands, when the soil is permeable and cesium-137 is water-soluble?

Tingey's presentation was designed to familiarize lay persons with the design and workings of a food irradiator: what irradiation is, how it works, its effects on food at various doses. He spoke of a half dozen benefits of irradiation, including its ability to kill insects, delay molding

and ripening, and inhibit spoiling.

Then he turned to the "concerns expressed" about the process, including the fear that irradiated food might become radioactive, saying, "I suspect I don't have to spend much time talking with you doctors about this, what with your experience x-raying patients and such." On the question of the safety of the radiolytic products formed when gamma rays meet food molecules, Tingey pointed to the astronauts, who eat irradiated meals while in orbit, as well as certain cancer patients, whose immune systems are so damaged (by radiation therapy, ironically enough) that they can no longer tolerate the germs and bacteria of regular food. If the astronauts were ailing, I doubted that NASA would tell us. But I made a mental note to ask Tingey whether the cancer patients had been followed to check for possible ill effects from the food. A claim of safety made sense if someone had looked for potential health problems and found none; if they hadn't checked, they might miss a problem or attribute it to other causes. Even more important, since the only true test of irradiated food would involve large numbers of people studied over many years, the relevance of these isolated cases was questionable.

As for the potential for accidents, Tingey assured the physicians that "a great deal of work" had been done to insure the integrity of the containment capsules for the nuclear material. The facility itself would have numerous structural safeguards to protect against spills and accidents. If a spill did occur, Tingey assured the group, it would be mopped up safely and at no risk to the workers.

Tingey's comments about accidental spills would have been unremarkable in another setting, but here it was difficult to listen without blinking hard. These promises were being offered to people whose state had suffered an irradiator accident whose full dimensions no one even knew about for twelve years.

A small group remained after the presentations to talk with the speakers. The atmosphere grew heated as one man peppered Tingey with questions:

"If we [the islands] are going to assume the risks of irradiation, will the farmers and the growers get the benefits, too?"

Tingey: "Why are you so concerned about irradiated food when there are studies showing it's safe?"

"I'm not concerned about irradiated food. I'm concerned about food irradiation."

"Any modern situation involves risks. There's no such thing as risk-free life."

"We're talking about reliance on a technical mindset."

"The same applies to automobiles."

"Except we're dealing with products that hang around for 300 years damaging human cells."

"We've got this cesium very well contained. It's safe."

"Isn't that the same rationale we hear for nuclear power plants?"

Later I asked Tingey for his thoughts on the exchange. His smile was tinged with regret. "It's unfortunate that irradiation carries such a stigma," he said softly. "It's a proven technology with no relationship to nuclear power." When you hear people's misgivings, I asked him, about the safety problems, about Oahu's own accident, does it bring questions to your mind about how advisable irradiation might be? "No," he said quickly. "It tells me we have to tighten up on our controls and improve our technology. Just because two airplanes crash I don't stop flying." He concluded, "We haven't had a loss of life from a food irradiation facility."

A final question. Those cancer patients—had they been followed? For moment, Tingey seemed poised to reveal something, but he changed his mind. "I can't comment."

Tingey's remark brought to mind a statement made the previous day by a state official about the 1967 irradiator accident. No injuries resulted from the spill, the official told the *Honolulu Star-Bulletin*. But a second statement he made was more precise: no injuries were known to have



Papayas: An irradiation test case



"Tryapapaya!" say growers. But will consumers go for irradiated ones?

resulted from the spill. He went on to explain that at the time of the spill, state and federal officials "didn't think it was that much of a hazard," which raises the issue of whether workers at the irradiation plant were ever surveyed for the health problems they supposedly didn't have.

What was beginning to amaze me about the irradiation debate was that when the confident promises of the irradiation backers were brought into question by new information—the larger reality—presented by the activists, the contradiction often fazed no one, least of all the pro-irradiators. During the doctors' meeting, Mosgofian pointed out how fruits and vegetables in some countries are not labeled to show they have been irradiated. He singled out South Africa by name. Moments later, Tingey spoke of widespread consumer acceptance given irradiated produce worldwide. As evidence, he, too, mentioned South Africa. Few seemed to notice the significance of the moment. Tingey certainly didn't. He repeated the same claim the next day.

Like me, Brion Sprinsock had been trying to understand how the proponents of irradiation handle conflicting information. Many of them seemed unwilling to process facts that clashed with their position. When I would challenge the activists with, say, a study supporting irradiation, they would patiently explain how the study was flawed. When I challenged people like Tingey, they would usually bring up a different study that supported their position, or shift the topic to a new point altogether. Sprinsock suggested that their belief in irradiation might be overwhelming their objectivity. "They can't conceive of the down side of irradiation," he suggested, "because they're not willing to let themselves think of it."

I was anxious to find out which way

the doctors were leaning, so I approached the young president of the association. It had occurred to me that Mosgofian, Sprinsock, and Tingey had all sounded well informed, and I wondered how the physicians would go about arriving at a consensus. Dr. Barry Shitamoto smiled broadly as he shook my hand, a gesture, like his blue jeans, that I took as a sign of openness. I explained my impression that all three speakers struck me as credible.

"You have cases well articulated by reasonable-sounding people," I said. "How do you take a stand?"

His response stunned me. "You *don't* take a stand!" he said.

"No resolutions?" I asked. "No testimony before the state legislature?"

"This is a very, very difficult issue," he explained. "You have to understand that the issue is extremely political, so much so that we're just not going to take a position."

The Hawaii Medical Association's decision would keep it off the hot seat, but it wouldn't do much for the island's residents. It meant that if people wanted medical advice on whether irradiated food was safe to eat, or whether it was safe to live near an irradiation facility, they would have to turn to state health officials, who, as I was to discover later, already seemed pressured to support the governor's position on irradiation. Ironically, this special dinner meeting had been called precisely because doctors were unsure how to respond to an increasing number of questions about food irradiation that they were getting from their patients.

It felt like midnight before the banquet room finally cleared. Someone was nipping good-naturedly at Tingey's heels, trying to push the tight-lipped consultant

into concessions. "Now come on, Garth," I heard him begin. "You and I both know..." I for one needed a break. As I passed by the restaurant lobby, the chef was unwinding in front of a television, stripped down to his undershirt. Together we watched the remainder of a Sumo wrestling tournament that was being beamed from Tokyo. I listened attentively to his occasional translation, grateful to be stepping away from a long day that wasn't entirely making sense.

Friday morning, September 26

The papaya industry meeting was crowded. Perhaps a hundred people had shown up at the basement function room of a nearby hotel for a day-long discussion of the state of the industry. I arrived late for the session on irradiation, but there were still plenty of "Tryapapaya!" promotional pens to go around, along with paper cups of papaya nectar, compliments, said the sign, of one of the growers. These were working people, most of them—whites, Philipinos, Hawaiians—and their work clothes fit well on an island where a necktie is taken as a sign that a person is from the mainland.

Bob Souza, president of the Papaya Industry Association, spoke first. Souza's was an interesting case. He had spoken out against irradiation some two years before, when the process had been proposed in the wake of the EDB ban. Souza had argued for an alternative called double dipping, in which papayas are immersed in two hot-water baths that kill fruit flies and their eggs. At the time, researchers at the Department of Agriculture were still ironing out kinks in the process, such as the tendency of the water baths to harden the fruit and prevent proper ripening. But Souza supported it nevertheless. For some reason, now that the double dip method had been improved enough to be used by all the major papaya packers, Souza had changed his mind and come out in support of irradiation. "The double dip method isn't always feasible," he told the growers at the meeting, "because it has to be used within eighteen hours after harvest. This can be difficult."

Souza hadn't been the only official to flip-flop on irradiation. Four months before the trade association meeting, the state's largest papaya packer had come out against the idea. Amafac Agribusiness president Dennis Teranishi had said, "I don't want to fool with it." Now there were rumors that Amafac was not only supporting irradiation, but actually lobby-

ing to have a facility built on company property. It made sense: the giant packer probably read the writing on the wall and reasoned that if the facility was inevitable, better to have it constructed where the company could best use it. Teranishi was circumspect when I asked him about his apparent change of heart. "We're giving the idea [irradiation] serious thought," he said.

After Bob Souza, Denis Mosgofian held the stage for some twenty minutes. This time his eloquence seemed spent in minutes. Determined to emphasize the nutritional losses of irradiated fruit, Mosgofian used precious minutes driving home a point more germane to an audience of consumers than producers. As he took his seat to polite applause, I wondered if he had considered making the likelihood of consumer rejection the cornerstone of his talk. Or for that matter, whether Kathy Dorn had thought to speak. Who better to discuss consumers' misgivings than a mother?

The next man bent to have his speaker's lei draped around his neck. His name was Scott Ahlstrom, and he represented the engineering firm CH₂M Hill. CH₂M Hill is already in the irradiation business. A subsidiary, Iotech, sterilizes medical instruments at the largest cesium-137 irradiator in the country, located near

Look, if I have chest pains and I feel I need a bypass operation, who do I go to?"

"A cardiologist."

"Right."

"But what do you do after you see the cardiologist?" Mosgofian countered.

"I don't know."

"You get a second opinion. Otherwise you're relying on the word of a person who has a personal stake in operating on you. You have no way of knowing whether his motivation is his own financial interest or your health."

If the argument made an impact, it was imperceptible. The papaya growers at the meeting didn't seem bothered by the point either. Ahlstrom showed slides of spotless irradiation facilities throughout western Europe, and spoke of the need to deal with irradiation "as a non-emotional issue. Only then can we come to an informed decision." Ahlstrom talked about the safety features built into irradiators, and concluded, as Garth Tingey had the night before, "It is very difficult for us to imagine a credible scenario for the awful things people have predicted."


One of Ahlstrom's slides was a photograph of two crates of papayas, one conventionally processed, the other irradiated, both batches evidently stored for some time. The untreated fruit was dark and

When I asked about the possibility of consumers rejecting irradiated papayas, he cited a CH₂M Hill figure that 66 percent of consumers surveyed support the idea of irradiation. He did not mention the survey cited by Mosgofian that found just the opposite.

As I talked with more growers, it became clear that in their own individual assessments of the costs and benefits of irradiation, hope sprang eternal. It was a hope borne of years of economic depression. Hawaii's tropical fruit growers had been hard hit by the loss of the pineapple industry, which had moved to the Philippines for cheaper labor, as well as the declining mango crop, which, without EDB, was rapidly losing ground to voracious worms. The papaya industry itself was emerging from a disastrous 1985. Record production levels the year before had driven market prices so low that farmers could not recoup the cost of production. Farmers cut back on new plantings as a result. The new double dip method had been causing headaches, too, as mainland consumers were refusing to buy hard fruit. These and other problems had caused a 30 percent decline in the papaya harvest, and the growers were eager to return to relative prosperity.

An irradiator promised such prosperity in the form of expanded markets. Proponents of food irradiation saw the process as a way to make papayas available to countries like Japan, where irradiated food has already appeared on the market. Opponents doubted the market expansion theory and promised near-certain rejection of irradiated papayas on the health-conscious U.S. mainland, which buys up half of the Hawaiian papaya harvest. Opponents also pointed out that the Japanese have largely rejected irradiated produce because of its indelible association with the atomic bomb.

The growers had no way of confirming either set of facts, but the hope for better times made it easier to accept the version of reality that offered the chance to expand their market. It was a frame of mind that pushed the possibility of disaster to the periphery as the potential benefits took center stage. But the risks had a way of creeping back into the spotlight. It was interesting to hear the growers support the new facility with words that downplayed the negative instead of emphasizing the positive. One grower I spoke with gave a single reason for his support of irradiation: "We're all going to have to die anyway at some point. That's how I see it." When I asked him whether he was concerned about con-

 One papaya grower said that risks are a necessary condition of progress, alluding to the space shuttle disaster as unfortunate but the price we pay for achievement.

Denver, Colorado. CH₂M Hill is also being paid by DOE to develop commercial uses for nuclear weapons waste. While critics wonder whether a firm with such ties can complete the Hawaii feasibility study with objectivity, the company sees no conflict of interest. One spokesman told the *Honolulu Star-Bulletin*, "I like to think we were selected on the basis of our qualifications."

That was justification enough for the state of Hawaii. Denis Mosgofian relates a conversation he had with an official of the state Department of Planning and Economic Development, which had awarded CH₂M Hill the feasibility study contract. "CH₂M Hill has a vested interest in telling you an irradiation facility is feasible," Mosgofian had argued.

"But they're the experts," the official responded. "Who else can we look to?"

splotchy; the irradiated box was remarkably well preserved. It was one of the more indelible images of the afternoon, and it helped set the tone for Garth Tingey and the final speaker, an agricultural researcher and well respected expert on papaya irradiation who assured the audience that irradiated fruit was perfectly safe to eat. "I've probably eaten more irradiated fruit than anyone in the world, and as you can see," he smiled, "I'm perfectly healthy."

By the time the session broke up, it was clear that the last several speakers represented the calm voice of reason. The papaya growers I spoke with fully supported irradiation. One man talked to me at some length about how risks are a necessary condition of progress, alluding to the space shuttle disaster as unfortunate but the price we pay for achievement.

summer rejection. He thought for a moment, then smiled in the direction of the trade association president, and answered, "Talk to Bob Souza about that."

There was a noticeable fraternity at the meeting between state officials, DOE, and CH₂M Hill. They sat at the same table and clustered together afterwards. I had noticed the same closeness the night before as Garth Tingey, a contractor to DOE, referred to a state official as his "host." If state officials were concerned about at least the appearance of impartiality, one might have expected them to place some distance between themselves and the irradiation advocates. A local reporter who had been following the irradiation story helped me put some of what I was seeing in perspective. Gesturing that we walk out of earshot, he explained that Hawaii's state government is populated largely by Japanese. And just as the Japanese show great deference to the Emperor, so too are Hawaiian bureaucrats more prone than most to defer to the desires of the governor. It was an atmosphere, he suggested, that leads to the creation of political machines. "You won't hear it being talked about, but believe me, the machine is putting everything it can into a food irradiation facility."

Sunday evening, September 28

The machine theory was certainly consistent with the broad support that irradiation had received from the major actors on the island. Even public health officials, who might have been expected to voice some concern about irradiation, had been strangely quiet. Bob Sumner-Mack, M.D., the island's chief medical officer for the state Department of Health, had gone so far in private as to call irradiation "a gift from the devil." But when he was invited by the *Hawaii Tribune-Herald* to write a guest column on the subject, Sumner-Mack limited his discussion to the health effects of eating irradiated food—effects he judged negligible—instead of considering the broader range of potential health problems a facility might pose. When I caught up with him, Sumner-Mack hinted at the strain of working in an environment where political considerations often collide with professional judgment. "You have to remember that the heads of this agency are political appointees. The other doctors and I here in the department spend a great deal of our time trying to educate these people in ways that don't always work, because they have different priorities."

But what was happening in Hawaii had a less conspiratorial explanation as well—that everyone was simply aiming to satisfy their own individual interests. What Denis Mosgolian said was true: by having a food irradiator, the world gains papayas with sterile fruit flies. But there are other benefits to be had, too. The Department of Energy gains a way of reducing a growing pile of nuclear waste. The Department of Defense gains one less constraint on the production of nuclear weapons. Consulting firms like CH₂M Hill gain lucrative contracts. The papaya industry gains the hope of new prosperity. Bureaucrats gain favor with their department heads by quietly carrying out the will of their superiors. The state medical society, by ducking the action, gains by not being drawn into a difficult and potentially divisive controversy. Irradiation was rolling ahead not because everyone supported it for the same reason, but because a confluence of interests worked in its favor.

With everyone determined to advance their own cause, who would see to it that consumers' interests were served? Who but consumers themselves? Sunday evening, three days after the press conference that began this unlikely odyssey, I drove out to a small town on the edge of Hawaii's volcano district to sit in on a community meeting about irradiation. Bob Sumner-Mack was there. So were the activists. State Rep. Andrew Levin was there, too. Levin, who represents the city of Hilo, told me he was confused by the mixed messages he was getting from the experts. "Groups like the American Medical Association have gone on record as supporting irradiation. The FDA says it's safe and so does the U.N. But when I ask the Nuclear Regulatory Commission what you do in the event of a problem, I can't get them to respond to any of my letters." Levin was at the meeting not in his official capacity, but to learn more about the issue, just like everyone else.

It was a spirited discussion that lasted well into the night. And while it was evident that not all of the island's residents would resist food irradiation, it was also clear that the more people knew about the interests that lay behind the information they were (or were not) receiving, the more irradiation raised disturbing questions. Together the group pondered how to broach the distance between where they stood and where they wanted to be.

One woman who was now planning to approach her state representative was not certain that her message would get across. "How do we make our represen-

tatives listen to us?" she asked. Brian Sprinsock had a ready answer. "Politicians need the public to articulate the political will of the community," he said. "It's their job to represent you, and you help them do their job when you let them know what's on your mind."

As Sprinsock outlined some principles of effective lobbying, something in the room seemed to lighten. The whole irradiation question had arrived on the island with a palpable fatalism. One didn't have to be familiar with machine politics to sense something was awry. If residents suspected that these men were presenting less than the total picture, it was because they were saying what they had to say to win public approval, and believing what they had to believe to convince themselves of the correctness of their mission. In the process, Hawaii was seeing the politics of expediency rather than real democracy. The public meeting, I realized, was simply making the debate more democratic, opening it to a broader spectrum of participants and making sure government worked more the way it was intended to.

Sprinsock said it best when he explained how the coalition plans to handle the feasibility study once it is released later this spring. If the study addresses the full range of issues, Sprinsock feels it will only help the coalition by pointing out genuine areas of concern. If the study contains important omissions, the coalition will expose them. Either way, he said, the coalition will win. "I see the costs and benefits as a scale," he said, gesturing with his hands. "The benefits are much lighter. The only way the irradiation facility will be built is if someone lays a hand on the scale. What we're going to do," he promised, "is take the hand off the scale." □

Resources

National Coalition to Stop Food Irradiation, P.O. Box 59-0488, San Francisco, CA 94159; (415) 566-2734.

East Hawaii Coalition to Stop Food Irradiation, P.O. Box 1559, Pahoa, HI 96778; (808) 935-0604.

Papaya Administrative Committee, Robert A. Souza, Pres., 1100 Ward Ave., Rm. 360, Honolulu, HI 96814; (808) 533-3841.

Food and Drug Administration, Clyde A. Takeguchi, Center for Food Safety and Applied Nutrition (HFF-334), 200 C St. SW, Washington, D.C. 20204; (202) 472-5690.



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Food Irradiation: 'Genetic Roulette'?

By Jeanne Sharpe, D.C.

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Food irradiation has become a reality. The Food and Drug Administration (FDA) recently announced that it is permitting irradiation of fresh fruits and vegetables. Some foods, however, had already been undergoing this process—pork, wheat, potatoes, and more than 60 spices and seasonings. The FDA's rule legalizing irradiation tripled the dose currently permitted to be used on spices.

The FDA approval follows more than 30 years of scientific research and is based on reviews of 441 toxicity studies. Opponents of the process, however, contend there still are too many unknowns to make it safe for the public.

How Food Irradiation Works

Irradiation is a process in which foods are exposed to gamma rays, roentgenograms (X-rays), or electron bombardment to kill insects, molds, and/or bacteria that can lead to spoilage or disease. The food itself does not become radioactive.

Foods that are to be irradiated are placed on a conveyor belt, which travels into a chamber protected by thick concrete walls. A radioactive source, such as cobalt-60 or cesium-137, a waste product of the nuclear power industry, emits the radioactive rays.

At this time little definitive documentation concerning the long-term safety of this process on humans is available, and little is known about the chemical changes that occur in irradiated food. It has been observed that irradiation of grains and vegetables stimulates the production of highly toxic and carcinogenic toxins, which are 1,000 times more carcinogenic than EDB, a fumigant banned in 1984 by the Environmental Protection Agency.

Irradiation also produces free radical formation, which, in turn, creates radiolytic products. These new molecules can produce cytotoxic substances. In a paper entitled, "Basic Effects of Radiation on Food Matter," H. Glubrecht, of the Institute of Biophysics, noted that formaldehyde has been observed following the irradiation of carbohydrates where oxygen was present. Peroxide formation can be another problem. Benzene can be formed in irradiated beef. Irradiated meats can also produce hydrocarbons, carbonyls, and sulfur compounds. These volatile products can be traced to either fat or

protein, and they are responsible for the somewhat unpleasant odors caused by irradiation.

Destroys Vitamin Content

Irradiation destroys vitamins, especially vitamin A and its precursor, carotene; it also is a destroyer of vitamin B fractions, vitamin C, and vitamin E.

Radiation does not stop oxidative reactions that lead to rancidity in meat, poultry, and fish nor enzymatic reactions in these foods.

Food safety is in question again with regard to the possibility that food irradiation may spawn irradiation-resistant strains of bacteria and viruses. There is also the risk of improperly monitored and calibrated machines, including radioactivity in foods. Because no long-term studies have been done, the final word on the safety of irradiated food is not in, wrote Mark Robinowitz, assistant director of the Health and Energy Institute, a public-interest group concerned with the health effects of radiation, in *The New York Times*, June 1, 1986 (p. F2). Moreover, because irradiation produces scores of compounds, of unknown identity, the harmfulness of the process cannot be fully appraised at this time.

The implications of food irradiation technologies on public health and the environment could be quite serious. The largest subsidizer of food irradiation is the Department of Energy. The Coalition for Food Irradiation is composed of 30 of the largest food-processing companies which stand to create enormous profits from cornering the market on such an expensive and centralized procedure. The DOE has allocated \$5 million of its 1986 budget to promote food irradiation. Among its other responsibilities, the DOE produces all of the nuclear material for nuclear weapons. Cesium-137 is a by-product of processing plutonium for missiles. Thus, food irradiation seems a convenient way to be rid of nuclear waste material.

Manufacturing more cesium-137 presupposes more plutonium which increases already existing problems of storage, handling, transport, and terrorist threat of attack. The two legislators who first introduced the food irradiation bill are from the State of Washington, home of the largest cesium-137 storage site in the country.

(Continued on page 3)



Keeping Pace



Bulemia, the Closet Illness

By Jeanne Sharpe, D.C.

Bulemia, the binge-purge syndrome, seems in current society to be a problem experienced for the most part by women. It is a desperate attempt to deal with many forms of anxiety, depression, intimacy, stress, and/or loneliness. Being thin, that is, controlling one's weight, is rewarded today and comes to determine closely one's self-worth.

This syndrome has existed since Roman times when huge food orgies took place, followed by vomiting, then eating again. The cycle of this behavior seemed endless, continuing for days.

The Nature of the Syndrome

Bulemia follows often discrete patterns of binge eating—rapid consumption of food usually in less than two hours. The food is most often high in calories and eating is terminated by abdominal pain, sleep, social interruption, or self-induced vomiting. Laxatives are frequently used, and it is not unusual to observe frequent weight fluctuations of 10 pounds or more.

The bulemic is aware that the eating pattern is abnormal and fears not being able to stop eating voluntarily. Bulemic individuals are preoccupied with food, and depression and guilt follow the binge episodes.

Bulemics indicate that they have a constant and continuous concern about their body size, and they most often perceive their bodies as being ugly and unattractive. As a group, bulimia patients experience a significant amount of fluctuating mood states, impulsive behavior, low frustration tolerance, and high anxiety. They have difficulty with self-esteem and self-criticism.

Bulemia is not viewed solely as an eating disorder, but rather as an extremely rigid pattern of thinking, feeling, and relating to the world. The bulemic's family members tend to manifest some type of enmeshment, overprotectiveness, rigidity, and lack of conflict resolution. There tends to be involvement of the bulemic in parental need issues.

Commonly, not until bingeing has gone on for five or more years does the bulemic patient seek assistance. It takes that long for self-regulation to break down. This amount of time in bingeing and purging takes its toll, and some common abnormalities can result, including metabolic alkalosis, hypochloremia, hypokalemia, edema, kidney dysfunction, and a

predisposition to cardiac abnormalities. Dental cavities and tooth erosion also occur.

The Role of Food

Food and its preparation and enjoyment is indeed a social event. For bulemics, in particular, food has become an addiction, a source of stress, something to be feared. Food serves as a substitute for the "missing" pleasures in life. It soothes these missing basic needs. A single binge can obliterate an entire week's worth of problems.

Treatment of bulimia is best accomplished in centers that specialize in eating disorders. Cognitive behavioral techniques, group therapy, and journal-keeping all assist in helping the bulemic realize and deal effectively with the underlying emotional causes of this disorder. Family support and understanding are essential. Societal parameters concerning attractiveness and individual feelings of self-worth need to be reevaluated. ▲

Food Irradiation: 'Genetic Roulette'?

(Continued from page 1)

International Irradiation Symbol

To mark and identify foods that have been irradiated, an international symbol is to be used—a broken circle with a small ball and two leaves in the center (see first page of this issue)—and the words, "treated by radiation" or "treated by irradiation." The first foods to bear this symbol will likely be papayas, nectarines, peaches, strawberries, and melons.

Use of the symbol, however, is suspect, as the FDA has no empirical test to detect irradiated foods.

Among organizations formed to attack food irradiation, is the National Coalition to Stop Food Irradiation, whose address is Box 59-0488, San Francisco, CA 94159. In addition, a bill now before the House of Representatives would block implementation of the recent FDA rule until effects of irradiated food on public health and the environment are better understood. The bill, among other things, would also require irradiated ingredients to be labeled. Persons interested should pressure Congress to block the FDA action until more is known about food irradiation.

Food irradiation can be perceived as the fulcrum of the 1980s, uniting peace activists, environmentalists, and nutritionists. Interfering with food, our main life-force, can only result in irreparable consequences to planetary evolution. ▲

A GRAIN OF TRUTH

FOOD POLLUTION

There's a growing perception in this country that much of our food is polluted.

This year even more public pressure will be brought to bear on the 45,000 toxic farm chemicals still in use. "More study is needed" on chemicals like Ethylenebis(dithiocarbamate), a widely used, potentially dangerous fungicide, but most of the people we talk to ask, "What can we do about it today?"

Arrowhead Mills has been doing something about food pollution for more than 20 years. The Golden Rule

applies to our relationship with the land too. Increased yields and profits, brought about by promiscuous use of pesticides, have a price tag we are not willing to pay.

Arrowhead Mills isn't immune from the concerns of residues and unwanted chemicals. That's why we always test what we buy, and why we test our tests too. The quality of our products is your assurance that we've done all we can to make sure your food is clean.

Obviously, we recommend one thing you can do about food pollution is buy Arrowhead Mills products. We urge you to purchase from anyone who cares deeply about the purity of the food they sell. Companies like Chico-San, Timber Crest, Heinke, Lundberg and other fine, natural food suppliers, also offer many high quality products.

In our democracy we vote about what's important. The cash register is a powerful ballot box. You cast your vote on food pollution—every time you shop.



Arrowhead Mills, Inc., P.O. Box 2039
Hereford, Texas 79045 (806) 364-0730

FDA Approves Irradiation Of Produce

The Food and Drug Administration has approved the use of radiation to treat fresh fruits and vegetables and has tripled the amount of radiation already allowed on herbs and spices.

Irradiating certain foods can extend their shelf life by killing insects and inhibiting spoilage. Under the FDA ruling, fresh fruits and vegetables can be treated with up to 100 kilorads of radiation, and herbs and spices up to 3,000 kilorads. (A dose of 500 rads can be lethal to humans.)

Because it will extend the shelf life of certain foods, the ruling is seen by some as a great service to consumers. Others, however, consider the practice of irradiating foods to be expensive, unsafe and unneeded.

"Irradiation of foods isn't necessary," said Mark Robinowitz of the Washington, D.C.-based Health and Energy Institute. "There's no need to proliferate the production of nuclear waste just to keep strawberries on the shelf an extra three days. It will continue the centralization of the food system and make food more expensive."

Already a bill has been introduced in the U.S. House of Representatives to block the FDA ruling. Introduced by California Democrat Douglas Bosco, the bill would stop the use of irradiation on fresh fruits, vegetables and pork, return the amount of radiation

permitted on herbs and spices to 1,000 kilorads and require strict labeling of irradiated foods. Under the proposal, labels of processed foods would indicate all irradiated ingredients and restaurants would mark dishes with irradiated foods on their menus.

The labeling of irradiated foods has been a subject of ongoing controversy. Originally, officials favored no labeling at all, then the term "picowaved" was going to be used, and the latest decision is to use the phrases "treated with radiation" or "treated by irradiation." A further explanation may be added such as "treated with radiation instead of pesticide chemicals to control insect infestation." The labeling will also include a tulip-shaped logo that has become an international symbol indicating that food has been irradiated.

The costs of irradiation have also cast a shadow on its reported consumer benefits. According to a study by the United Fresh Fruit and Vegetable Association, irradiation will add two to three cents per pound to the cost of produce. It also has been estimated that the cost of building an irradiation facility will be about \$10 million. Robinowitz, however, said this figure is too low.

"That doesn't include the cost of producing isotopes, transporting isotopes to and from processing plants, and the cost of disposing of the isotopes," he said.

Patients Who List Health Concerns Are Sane

You have a doctor's appointment in a few days and want to clearly communicate your health complaints, so you write a list.

Unfortunately, upon seeing your list, many doctors may think you're emotionally ill. They call it *la maladie du petit papier*, the illness of the little piece of paper.

Believing listers are unfairly stigmatized, Dr. John F. Burnum encourages physicians to let go of their prejudice and open communication channels. "Most notes seem to be written for no devious reasons, because of no lurking Freudian distemper, but because patients and families simply want to get things straight," he wrote in a *New England Journal of Medicine* essay.

In a study at his medical practice, Burnum noted that out of 900 patients during a four-month period, 72 made lists (not including lists of medications). None of these patients, he

said, exhibited emotional disorders.

Many of the listers are habitual list makers. "Many of their lists include shopping items or other self-reminders in addition to medical questions; 'pick up Jane' may follow 'rectal bleeding,'" wrote Burnum, an internist from Tuscaloosa, Ala. The listers tend to be women and in the upper-income bracket. The lists most often contain five or six items and are handwritten.

Some patients told Burnum they organized their thoughts on paper so they would not waste his time.

Burnum believes doctors who dismiss list writers as emotionally unstable may stifle communication and do harm. He concludes, "Patients are free to write lists, to mime or sing their concerns. Medical care turns on communication. Whatever helps patients express themselves and helps physicians understand patients is acceptable."



to be shut down, they were still irradiating liver meal for dog food, court records also showed.

Nor is International Nu-tronics' case unique. Radiation Technology, in New Jersey, hasn't been indicted for any wrongdoing, but it has been cited for 32 NRC violations between 1970 and 1984. In an investigation early in '86, the NRC found that the firm endangered workers by willfully circumventing a safety-lock system. Their license was suspended. Last summer, after the firm took several corrective actions, including barring the chairman (who had resigned) from any further involvement, the NRC restored the license. Meanwhile, the Justice Department has launched a criminal investigation. —Janice Horowitz



imum fine that was possible: \$36,000.

"This is not just a slap on the wrist," says appeals chief Samuel Moulthrop of the U.S. Department of Justice. "It is the first time an irradiation executive has been convicted on a criminal charge for violating Nuclear Regulatory Commission (NRC) regulations."

When water contaminated with cobalt-60 leaked from the plant, court records show, the company didn't notify the NRC, as

required. Instead, to cover up—and fool inspectors—it put lead wool in walls and floors, and covered hot spots with telephone poles. Cleanup workers weren't given safety suits—just mops.

The company was also shown to be irradiating cocoa, a food not approved for the process. (So far, the FDA has sanctioned irradiation of wheat, potatoes, onions, spices and, more recently, a wide array of fresh produce.)

And while they pretended

Cover-Up Nuclear Greengrocers

Irradiation may be safe for food—but not for the environment

The nuclear firms that irradiate foods may not be the kind of people you want handling your potatoes.

The issue isn't just whether irradiated foods are safe to eat, though that debate continues. It's the irradiators themselves.

In December 1986, an executive of the California firm International Nu-tronics was convicted on a felony charge and put on two years' probation for concealing a 1982 spill in its Dover, NJ, plant. The sentencing judge also imposed on the firm the maxi-

Produce and pork can be treated with radiation before marketing, but consumers are leery

Imagine sinking your teeth into a feast of irradiated pork chops, asparagus zapped with gamma rays and, for dessert, strawberries à la cobalt 60.

Yummy or not, it's an American menu of tomorrow—if some federal officials and food processors get their way.

Radiation is being touted by the nuclear industry and food companies as a safe alternative to chemical pesticides and a way to kill parasites like trichina found in some swine herds.

The Food and Drug Administration in April approved its use on fruits, vegetables and fresh pork, and the U.S. Agriculture Department wants the FDA to authorize it for poultry as a way of controlling salmonella, bacteria that kill 2,000 Americans yearly.

Sometime this fall, in a limited-market test of consumer acceptance, a few stores will begin selling radiation-treated pota-

Irradiated food: Is it safe?

atoes sufficient strength, could cause cancer. But advocates contend that cooking can create as many food toxins.

"The health effects of food irradiation are simply unknown," asserts Dr. John Gofman, professor emeritus of medical physics at the University of California at Berkeley. He says an enormous human experiment lasting 20 years would be needed for a definitive answer.

Public concerns over safety extend to the handling of radioactive cobalt used

exposures in the past 20 years. And because no nuclear core is involved, it is impossible for a meltdown to occur.

The food-treatment process is simple. Foods put on a conveyor belt pass near a concrete-and-lead-shielded chamber housing the radioactive source, typically cobalt. Emitted gamma rays destroy insects and bacteria. Higher doses—generally above those allowed by the FDA—also could extend the shelf life of perishables. The process does not work on all foods: It causes leafy vegetables to lose their green color, grapes to become soft and bananas to develop brown spots.

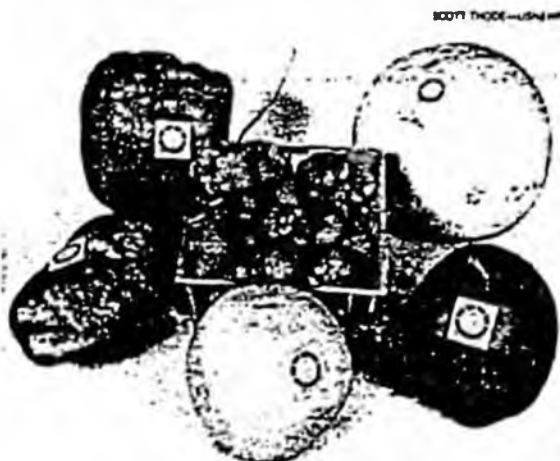
Americans have been eating some irradiated ingredients for the past three years, including dried spices used in some prepared foods such as frozen pizza and cookies. But authorities say less than 1 percent of the spices consumed in the U.S. are treated this way.

The labeling of irradiated food is nearly as controversial as its safety. Surveys show most shoppers would not buy produce labeled as irradiated. However, the FDA plans in two years to drop its rule that foods display the phrase "treated with radiation." Instead, it will continue to require only an international symbol for irradiation—a broken black circle and geometric design—used in countries such as Japan and Holland, where irradiated food has been sold for several years.

Consumer groups are charging that shoppers are kept in the dark because prepared foods that include irradiated ingredients are not required to be labeled. Mark Rosengarden of the National Coalition to Stop Food Irradiation complains: "I don't want my 3½-year-old son eating irradiated food, and there's no way of keeping it out of his mouth."

"This industry will develop slowly," says Bahar Gidwani, a stock analyst at Kidder, Peabody & Company. By the year 2000, though, some promoters envision hundreds of irradiation plants sending such perishables as mangoes to Minnesota and fresh shrimp to South Dakota, and irradiation rivaling canning as a way to preserve foods. Predicts Gidwani: "Within a decade, we'll see every food processor worth his salt in this industry."

by Peter Dworkin



These fruits and vegetables are good candidates for gamma-ray treatment to kill insects



FDA approval of process draws protest from the National Coalition to Stop Food Irradiation

atoes or onions in the Pacific Northwest. The industry will keep locations secret for fear of protesters. And there's the hitch. FDA rule making on irradiation has drawn more mail from worried consumers than any issue in recent times. Resolutions urging a ban on irradiation or stricter labeling have been introduced in at least six states. Faced with rising opposition, the food industry is taking a wait-and-see attitude before pushing treated meats and produce to market.

The process leaves no radiation residue on food, and agencies from the FDA to the World Health Organization say that foods exposed to low doses are safe for human consumption. However, the subject is shrouded in fear and scientific unknowns. The few tests of irradiated food on people have been brief, and critics charge that not enough reliable animal studies have been done. Irradiation does break down chemical bonds in food, potentially creating toxins that, in

the process. In June, the Nuclear Regulatory Commission accused Radiation Technology, Inc.—which had planned to sell irradiated pork, asparagus, avocados and mangoes this summer—of lying to investigators about disconnecting a safety lock on a radiation room door. The firm's license at its Rockaway, N.J., plant was yanked, and the company now faces possible criminal prosecution. Another irradiation firm, International Nutronics, Inc., was indicted on charges of conspiring to cover up a 1982 accident in which radioactive water seeped into soil at its Dover, N.J., plant.

Defenders of the technology contend that the 45 U.S. irradiation plants now used to sterilize medical instruments have a fairly clean safety record. Only two workers have been injured through accidental

Plant safety also is a concern



Food Fight over Gamma Rays

Critics bombard irradiation as a preservative

To Michael Fey, it is the "most important advance in dietary health since the invention of pasteurization." To Denis Mosgofian, it is the "massacre of the American food supply." Fey, food scientist, works for a company called Radiation Technology. Mosgofian is director of the National Coalition to Stop Food Irradiation. The two men are talking—yelling, really—about one of the most emotional health issues of the 1980s:

the use of irradiation as a preservative. The mixing of gamma rays with edibles has set off a nuclear food-chain reaction, releasing high rhetoric, short tempers and mass uncertainty.

The Food and Drug Administration approved the process for harvested wheat and potatoes more than 20 years ago; dried spices and slaughtered pork were added to the list in the 1980s. Last April the agency gave the go-ahead for irradiating fruits and vegetables, and a furor erupted. Despite the FDA's consent, the process until now has been used mainly to preserve herbs and spices. But last week gamma ray-treated fruit made its first U.S. appearance when Lorenzo's

Farmer's Market in North Miami Beach began offering irradiated Puerto Rican mangoes. The FDA is now considering whether to extend approval to fish and poultry. Nineteen other countries have also endorsed irradiation for a wide array of foodstuffs.

The method, which like radiology was developed around the turn of the century, is simple: food passes through a lead-shielded concrete chamber where radioactive cobalt 60 or cesium 137 bombards it with gamma rays, killing insects and bacteria and sometimes slowing ripening. The food does not become radioactive. "There's nothing in common at all between a nuclear reactor like Chernobyl and an irradiator," says Karl Abraham, a spokesman for the Nuclear Regulatory Commission (NRC). "It's like comparing bananas to tigers." Treated food "can be immediately eaten," says George Giddings, director of food irradiation at Isomedix.

Supporters claim that gamma-ray exposure offers an alternative to controversial pesticides, fumigants and preservatives, and protects human health by killing parasites like

trichina worms in pork and bacteria like salmonella, which causes food poisoning. Irradiation, they note, can extend shelf life. "We see the day when you can go into a supermarket and buy a barbecued chicken that has been cooked, vacuum-packed and irradiated. It can sit on the shelf for eight years, and all you'll have to do is heat it up," predicts Physicist Martin Welt, founder of Radiation Technology.



Giving treated mangoes the once-over at Lorenzo's in North Miami Beach

Critics bombard irradiation with objections. It can be expensive, adding as much as \$5 a lb. to the price of some fresh produce. Since it can be used only on harvested crops, pesticides will still be needed in the fields. Moreover, say opponents, the low level of radioactivity set by the FDA for produce (100 kilorads) is not strong enough to slow the ripening of most fruits and vegetables. Plant Biologist Noel Sommer of the University of California at Davis has concluded that 200 kilorads is needed to retard the growth of gray mold on picked strawberries, and at that level the berries turn squishy. Other claimed advantages may have drawbacks. Irradiation "can kill the organisms that produce the signals and odors that warn people



Nonirradiated and irradiated test mushrooms

As great as pasteurization, or a dietary massacre?

they are eating spoiled food," cautions Leonard Solon, director of New York City's Bureau for Radiation Control. "But it may not be able to kill the bacteria that cause food poisoning."

Still more debate centers around safety concerns. Adversaries contend that the treatment changes the chemical composition of food and can create carcinogens, such as benzene, formaldehyde and substances called unique radiolytic products (URPs). Those who favor the process respond that the quantities of toxic chemicals are minute, that they occur naturally (like benzene in eggs), and that some cooking methods—frying, for example—also generate small amounts of carcino-

gens. As for the URPs, they are not new creations at all, says the FDA, but simply existing chemicals that have not been detected before in the human diet. "There's no food that is completely known," points out FDA Biochemist Clyde Takeguchi. "You can't identify everything that's in an apple. The basis for establishing safety is not absolute safety. It's reasonable safety."

Security is at the heart of another charge. Noting that the Department of Energy plans to help build demonstration food-irradiation plants in Oklahoma, Iowa, Hawaii, Florida, California and Washington, opponents complain that the resulting spread of radioactive material will increase the chances of

mishaps during transport, use and disposal. Nor has the supervision of existing irradiation plants been reassuring. The NRC acknowledges that it may inspect a facility only once in three years. Radiation Technology's license to operate a New Jersey plant was recently suspended for two months after the NRC found that company officials tried to hide a safety violation. Next month International Nutrition goes on trial for, among other things, flushing radioactive water into the sewage system of Dover, N.J.

The controversy seems headed for a congressional showdown. California Democrat Douglas Bosco is pushing a House bill, with 39 co-sponsors, to void the FDA's approval of irradiation for pork, fruits and vegetables. The industry's supporters, however, are convinced that they will prevail. Says Physicist Welt: "It took 50 years for canned food to be accepted by your grandmother. It took frozen food 20 years to be accepted by your mother. It will take the housewives of today five years to accept irradiated food."

—By Anastasia Toulaxis.
Reported by Janice M. Horowitz/New York
and Dick Thompson/Washington

IRRADIATED FOOD: A MARKETING HOT POTATO

The FDA has approved use of the process to delay spoilage in fruits and vegetables. But the big food companies are not exactly lining up to irradiate. "A lot of pioneers were shot by the Indians," says a Campbell Soup executive.

By Robert Steyer

The food industry's embrace of radiation to kill pests and microbes and extend product shelf life has all the inner tension of a teenager's first junior-high-school dance. His hormones are in perfect working order, but he doesn't quite know how to ask the girl onto the dance floor.

"When it comes to food irradiation, you've got a lot of companies wanting to be second into the market," says Richard Greenberg, Ph.D., director of scientific public affairs for the Institute of Food Technologists, a professional society of 23,000 food scientists.

"We certainly don't want to be last," says Tony Adams, director of marketing research and planning for the Campbell Soup Company, but adds: "It's important to take a balanced approach to this, because a lot of pioneers were shot by the Indians."

In April, the Food and Drug Administration approved the irradiation of fruits and vegetables, greatly expanding the range of products that may be treated. At the same time, the FDA required conspicuous labels stating that a product has been treated with radiation. The big food producers and processors find radiation's benefits worth pursuing. But they worry about cost, safety, and, most important, consumer acceptance. Food irradiation presents a frustrating, almost frightening, marketing puzzle.

The giant food companies have been prodded by a few Government agencies, the more zealous members of their fraternity, and the few entrepreneurs who earn a living irradiating food and other products. Proponents say low doses of radiation can be used safely, effectively, and—when economies of scale kick in—cheaply.

They trumpet radiation as an alternative to pesticides, herbicides, additives, and preservatives in many foods. They say radiation will delay spoilage, improve U.S. food exports, and help alleviate world hunger by protecting shipments of food for longer periods.

Opponents—primarily consumer groups and some scientists—contend that tests to gauge the long-term effects of eating irradiated foods are inadequate and inconclusive. They say that the proponents' push to irradiate will create nuclear-safety as well as food-safety problems. Implicit in their objections, and sometimes explicit, is the threat of public protests against irradiated products and the companies that make them.

In the midst of the debate are the majority of consumers, who know little about radiation's effects on food or are confused about the conflicting claims. (See box on page 20.) Consumer research tells the companies to forget trying to convert the hard-core opponents—just concentrate education and marketing strategies on that great group of "undecideds."

But first, the companies have to convince themselves. "We have no intention of using irradiation unless it solves a problem that couldn't be solved in any other way," says Val Fischer, director of new technology for General Foods. The United Fresh Fruit and Vegetable Association, which represents growers, shippers, brokers, and wholesalers, found in a recent poll that 37 percent of its members would not sell irradiated food.

In three decades of mostly Government-sponsored research since President Eisenhower put food preservation in his Atoms for Peace program, food irradiation has remained a minuscule business. In the early 1960s, the FDA approved low-dose radiation treatments for killing insects in wheat and delaying sprouting in white pota-

Robert Steyer is a business journalist in New York.

toes. The FDA regulation, however, meant very little in reality because the products were plentiful, the technology was not readily available, and the savings were nonexistent.

Three years ago, the FDA approved radiation for killing bacteria in certain spices and herbs, and it has just approved higher treatment doses. But less than 1 percent of the spices consumed in the United States last year were irradiated. Merle Eiss, an official with McCormick & Company, a major spice producer, says cost comparisons depend on the type of spice and alternative treatment. "Some cost less, and some do not," she says.

The FDA has been stepping up its food-irradiation approvals. Last July, it gave the go-ahead for zapping pork to prevent trichinosis. The announcement in April that fruits and vegetables may be irradiated was its most sweeping regulation to date. Proponents of radiation, however, want the agency to do even more. They have petitioned to allow the treatment of poultry, fish, and shellfish.

The food giants, however, are not exactly lining up to irradiate. In fact, with only two exceptions, food companies have not petitioned the FDA to approve radiation treatments. "We're just not taking a lead role," says a spokesman for Del Monte, a major fruit processor. "We don't feel it's appropriate to discuss our plans." The Committee for Radiation Applications, a unit of the Atomic Industrial Forum, predicts "at best" some test-market efforts in the near future. "Don't expect to see an abundance of food products on supermarket shelves anytime soon," says its recent newsletter.

About 30 food companies, radiation firms, and food trade associations have created the Coalition for Food Irradiation to promote the process. The

coalition develops pamphlets and documents, meets with journalists (especially food editors), holds workshops for food companies, and talks to health and food-service workers. "Perhaps there's safety in numbers," says Ellen Green, secretary of the coalition. "I don't think any one company wants its products highlighted in the eyes of those groups that claim irradiation is unsafe."

The first and most important thing to know

about irradiation is that it does not make food radioactive, though high doses may alter the chemical composition. Irradiation is usually performed by gamma rays—produced by the radioactive isotope cobalt-60 or cesium-137—which pass through the food much as an X-ray goes through the body without leaving any residue. Other methods are high-energy electron beams (beta rays) and X-rays. Cobalt-60 is an expensive isotope that must be manufactured in nuclear reactors. Cesium-

137 is a byproduct of nuclear fission. Although cesium-137 accounts for 3 percent of nuclear waste by volume, it generates 50 percent of the heat and 55 percent of the radioactivity.

Typical irradiation facilities include a warehouse to store products before and after treatment; a processing chamber with thick concrete walls; a conveyor system that moves the products through the chamber in metal containers; and the radiation source. Food-irradiation units must be designed differently from those used to sterilize medical equipment—the products most commonly treated with radiation. "Food generally requires lower doses of radiation, but it's processed in larger volumes," says Bahar Gidwani, an analyst for Kidder Peabody. "Dosage levels must be more closely controlled for food because it is more sensitive to overdoses." Depending on



the fruit, an overdose can cause rind damage, uneven ripening, or faster spoilage.

Doses are measured in rads—an amount of energy absorbed from radiation. A kilorad (1,000 rads) represents about 100,000 times the dose a human would receive from a normal chest X-ray. The FDA permits maximum doses of 100 kilorads for pork, fruits, and vegetables, and up to 3,000 kilorads for spices.

The fact that the FDA is making more foods eligible for irradiation does not push the intense scientific debate off center stage—even though such organizations as the American Medical Association and the World Health Organization endorse low doses for certain foods. When the FDA announced its fruit, vegetable, and labeling regulation in April, it said that only five of the 441 surveys it had reviewed had been properly conducted. The agency threw out some tests claiming that food irradiation was safe. It also rejected studies asserting that irradiation caused increased tumors in rats, lower weight in dogs, fewer offspring in fruit flies, and chromosome damage in humans.

The FDA said that the five approved tests "indicate no adverse effects" from irradiated foods fed to animals. Dr. Sanford Miller, director of the FDA's center for food safety and applied nutrition, says the agency relied on chemistry tests more than animal studies. He says that force-feeding animals enormous amounts of any food—irradiated or not—can yield unusual results. "We're not worried about low doses," he says.

The FDA does not have to prove a product's absolute safety; the law says that's impossible. Safety requires competent scientists to establish a "reasonable certainty" that a food additive is "not harmful under intended conditions of use." That does not mollify such public-interest groups as the Environmental Policy Institute and the Health & Energy Institute, which want more long-term animal-feeding tests. They cite discredited tests as a reason for the FDA to go slowly. For example, they note that the agency allowed irradiation of canned bacon in 1963 based on Army research. Five years later the FDA rescinded the approval, saying that the tests had been improperly structured and sloppily conducted. The research was so bad that the FDA even dismissed comments by critics, who used the Army data to claim that irradiated foods caused problems. The FDA decision dis-

couraged a group of private companies from building a pilot meat-irradiation plant.

Even some food executives would feel more comfortable with more tests on specific products. "I want to make sure there are no problems with taste or consistency or toxicology," says the food-science director of a large food company. He says that foods with high protein or fat contents raise the most questions. "Once I get past my concerns, I think the future for irradiated foods is excellent," he says.

The ideal test has never been done, nor is it likely to be done, says Dr. John W. Gofman, professor emeritus of medical physics at the University of California at Berkeley. In a 1984 letter to the FDA, Gofman, who is often quoted by critics, said that a test should control the diets of 200,000 people of various age groups for 30 years and follow their health histories for at least 50 years—preferably for their whole lives. Gofman said in the letter that he had no objection to the sale of irradiated food so long as it was clearly labeled as such.

The scientific combatants, who often interpret the same test data differently, clash over several issues:

□ Critics say that radiation passing through foods causes "unique radiolytic products"—changes in chemicals that could turn into carcinogens. Radiation supporters say that radiation is less troublesome than charcoal broiling. The FDA says it found no evidence that radiation could cause harmful chemical changes at the dosage levels it has approved.

□ Critics say radiation diminishes the nutritional value of food. The FDA responds that its analysis of medical literature shows "no nutritional differences" between untreated foods and products treated at FDA-approved levels.

□ Several studies done in India in the 1970s indicated that radiation spurs the production of aflatoxin, which is produced by spores and mold and is 1,000 times more carcinogenic than the chemical ethylene dibromide (EDB), banned in the United States. Supporters say that the aflatoxin was caused by other sources. The FDA says that the studies "did not replicate normal food handling practice" and that aflatoxin cannot be cited as a radiation problem.

□ Irradiation could produce mutant or radiation-resistant bacteria, say the critics. The FDA says that mutant bacteria produced during food irradiation "are essentially the same as those that occur naturally." It concedes that "specific conditions and indiscriminate irradiation" could

"We have no intention of using radiation unless it solves a problem that can't be solved in any other way," says Val Fischer of General Foods.

produce mutants, but says that "the possibility that such mutants would be more virulent or more harmful would be remote."

The first U.S. patent for food irradiation was granted in 1905 for a process suggesting that ionizing radiation could kill food bacteria. Sixteen years later, X-rays were tested to prevent trichinosis in pork. By 1943, scientists at the Massachusetts Institute of Technology were trying to preserve hamburger with X-rays, and in 1947 the first scientific paper discussing food preservation through irradiation was published. Food irradiation tests accelerated in the 1950s, with the Army and the Atomic Energy Commission taking the lead.

About 25 foreign countries currently irradiate a wide variety of foods, ranging from frozen frogs' legs to strawberries, although the number of items treated in any one country remains relatively small. The Netherlands, Chile, and the Soviet Union treat the most varieties of food. The Russians were the first to irradiate products for commercial use, in 1958.

At the proper doses, radiation can destroy insects and larvae, kill bacteria and fungi that cause spoilage, and delay mold growth. But gamma rays that delay the ripening of some fruits can prevent ripening in others. The wrong dose can interfere with a product's normal metabolism, cause softening, increase the chances of rotting, and provoke uneven ripening. Heavy radiation levels can destroy nutrients and, in high-protein products, such as poultry and meat, cause offensive taste and odor. In some of the early Army tests, people complained that food treated with very high doses tasted like a "wet dog." The key is to find a radiation dose for each food that kills the pests but leaves the taste, texture, and nutrients alone.

An estimated \$30 million to \$40 million worth of food was treated here last year, providing only about \$1.5 million in revenues to professional irradiators, says Bahar Gidwani of Kidder Peabody. The 43 radiation facilities in North America derived 92 percent of their \$45 million in revenues in 1985 from sterilizing medical equipment and supplies. Only a small number of these units have been adapted for food.

Food-industry experts predict that Hawaiian papaya will be the first fruit irradiated, gamma rays kill papaya insects and delay ripening by several days. "But it may take a year because they haven't built a facility out there," says Sharon Bomer, government-affairs manager for

the United Fresh Fruit and Vegetable Association. Papayas, apples, cherries, guavas, mangoes, and strawberries are among the fruits most likely to benefit from the new rules, because tests show little radiation damage, such as uneven ripening or spots on the skin. Avocados, cucumbers, lemons, limes, olives, and bell peppers exhibit "significant documented irradiation injuries," according to research compiled by the Dole Fresh Fruit Company.

Grapefruit offers an intriguing problem. Citrus growers can no longer fumigate grapefruit sold domestically with EDB, because the Environmental Protection Agency has declared it a carcinogen. The growers can use EDB in diminishing amounts until 1989 for grapefruit shipped to Japan. Although the Japanese irradiate onions and potatoes, their Government has not permitted the importing of irradiated grapefruit. If Japan bans EDB-treated grapefruit and does not accept irradiated fruit, then citrus growers' choices will be sharply reduced. They can treat their products with methyl bromide, which is more expensive and less effective than EDB. Or they can try the experimental "cold treatment," in which fruits are exposed to near freezing temperatures for two weeks to kill pests. Research shows that radiation is effective in killing pests, but causes too much rind damage at doses needed to extend shelf life.

Pork presents another riddle. Regulations permitting radiation treatments to sexually sterilize *trichinella spiralis*—the parasite that causes trichinosis—have been on the books for a year, but there are no takers yet. "Major packers have inquired about it, but they won't do it themselves because of the cost," says Robin Kline, consumer-affairs director for the National Pork Producers Council. "Some small [irradiation] companies say they are getting ready."

Irradiated pork would cost consumers "a few cents more per pound," says Kline. But a new test that detects trichinae in live pigs would raise the price even less. Because the council has asked the Agriculture Department for permission to use the test, and trichinosis has dropped dramatically to about 150 reported cases per year in the United States anyway, why would pork producers risk the consumer-education headaches of irradiation? "That's a valid question," Kline says. "We think radiation has promise, but one way or another, we want to have trichina-free pork by next year."

Radiation supporters cite a recent Agriculture Department report showing that the costs of

Proponents say that radiation will improve U.S. food exports and help alleviate world hunger.

chicken and pork irradiation are far exceeded by the benefits of preventing deaths, disease, medical costs, and lost wages caused by the bacteria and parasites in these products. The authors say, however, that they did not measure the costs of transportation, radioactive-waste disposal, and promotion, or the "unforeseen health effects of consuming irradiated foods." The report did not compare irradiation with other treatments.

When the FDA ruled in April that irradiated foods must bear labels reading "Treated with radiation" or "Treated by irradiation," many food companies and radiation firms worried about consumers' reactions. They wanted no label, or a more innocuously worded label, or just the symbol used in some foreign countries—an abstract flower design encased in a circle.

A study by the Department of Energy and the National Pork Producers Council reported that "irradiation" triggered the most concern of seven labels shown consumers. The United Fresh Fruit and Vegetable Association said its members considered mandatory labeling the biggest problem in selling irradiated food. A study for the Commerce Department's National Marine Fisheries Service warned that a mandatory label "could not only be misleading, it could be dangerous." And the Department of Health and Human Services, to which the FDA reports, wanted a label saying that the food was "picowaved," a term describing one one-trillionth of a meter on the electromagnetic spectrum. Industry members, who liked this term, said it was as easy to understand as "microwave."

The FDA rejected all the euphemisms. It said that "picowave" was not commonly used within the scientific community or industry. Any confusion created by a label, the agency said, "can be corrected by proper [industry-sponsored] consumer education." The labels could even include such explanations as "treated with radiation to kill pests."

Much confusion surrounds the labeling issue. If a spice producer sells an irradiated retail product, he must label it. If the same producer sells an irradiated spice to a food company, which uses it in a frozen pizza, then the pizza producer does not need a label. What about the producer of mixed-fruit preserves who uses irradiated strawberries? What about the maker of frozen chicken dinners who uses irradiated peas? The FDA will make case-by-case determinations.

The discrepancy between "first generation"

(retail items requiring a label) and "second generation" products fuels opponents' criticism. "There could be some emotional backlash if consumers feel that the companies are hiding something from them," says Gidwani.

The regulations allow producers to put labels on point-of-purchase counter signs or bulk containers when it is not feasible to label individual items of unpackaged irradiated foods. Wholesalers must clearly label products so that foods are not zapped twice. That encircled flower logo will accompany all labels; and the FDA will decide in two years whether to drop the words and keep only the symbol.

Some radiation proponents protested the label regulation, and one threatened to petition the FDA to overrule it, but most food companies appear to offer grudging acceptance. "This won't make marketing any easier," says one executive, "but we might as well call a spade a spade."

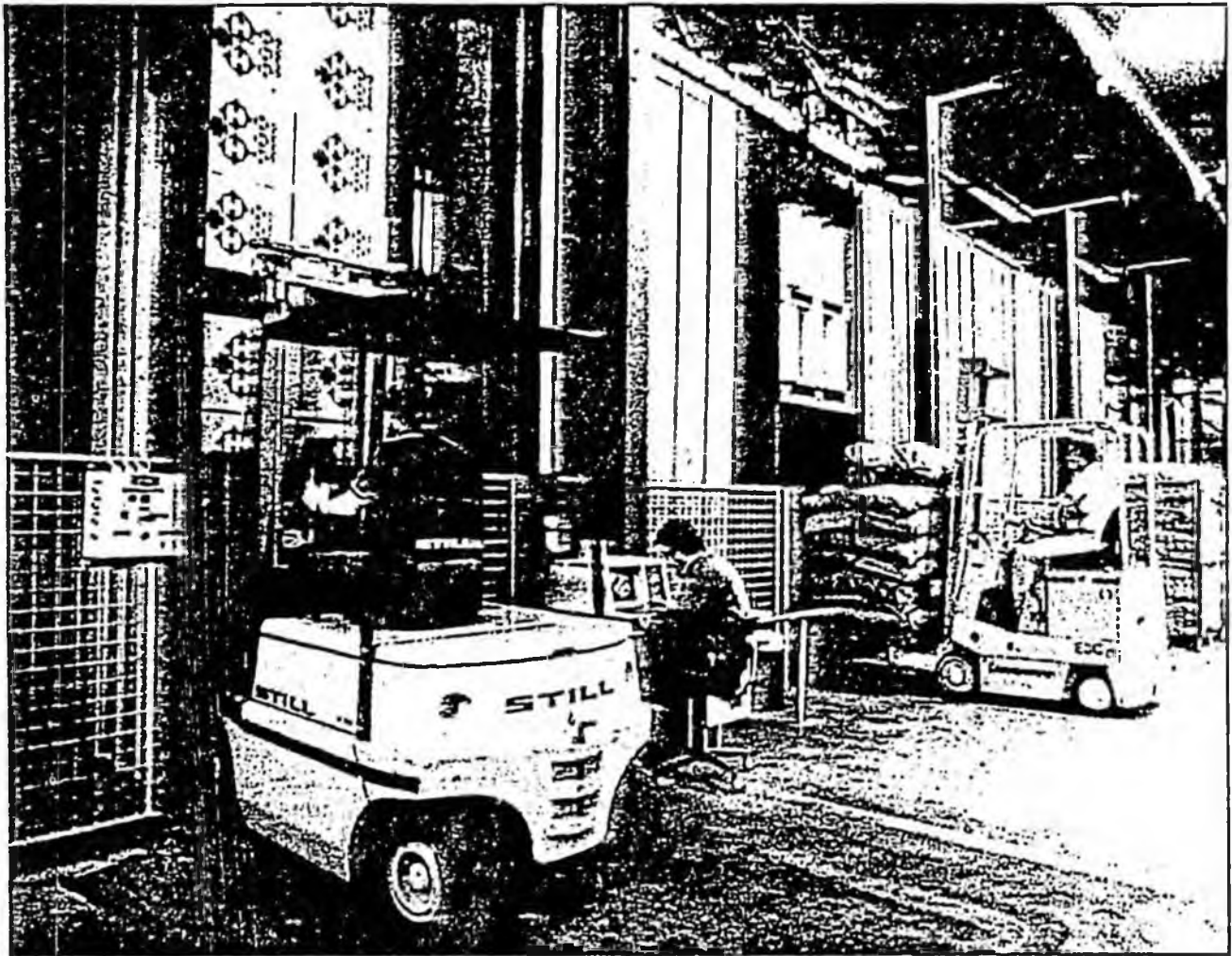
With consumers confused, costs a major question mark, and scientific debate raging, no wonder the big companies don't want to talk about their goals or test-marketing. Food companies are not even sure whether they want to do their own treatments. They must balance the desire to control the technique against the costs and potentially damaging public relations if they are cited for safety violations.

Charles J. Bauman, senior vice president of Dole Fresh Fruit, says it would cost \$2 million to \$5 million annually to run a radiation facility. "It's very hard right now, given all the problems, like consumer acceptance, to see any cost benefit," he says.

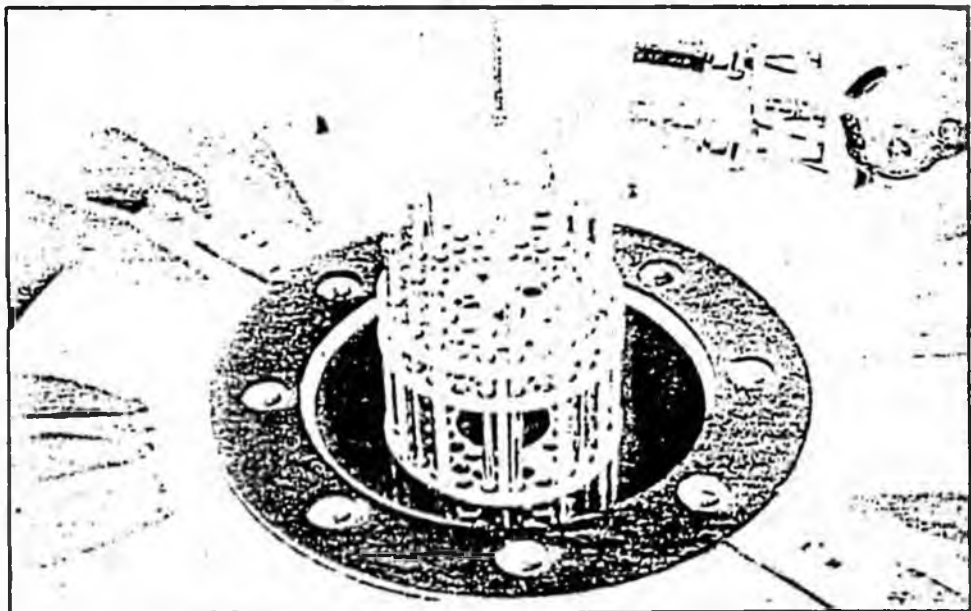
Lee S. Harrow, Ph.D., corporate technical director for the H.J. Heinz Company, says that "tremendous volumes" of food would be needed to justify the company's building its own unit. "We would lower our capital expenses by having the treatment contracted out," he says. "That's the normal practice in Europe." As with companies to which Heinz contracts the packing of its foods, Harrow says, Heinz would insist in any contract with an irradiator on conducting periodic inspections.

"If we leave it to the large companies, it may never happen," says Martin Welt, Ph.D., founder and chairman of Radiation Technology Inc. Welt is an indefatigable promoter of food irradiation and has initiated many successful food petitions to the FDA. Welt says he will sell pork under his own brand name, Picofresh, as soon as he gets the requisite approvals from several Federal agencies. "All we ask is an opportunity to

The gamma rays pass through the food without leaving any residue, much as X-rays pass through the body.



Safe handling? Above, products being loaded into an irradiator designed by a Canadian firm. At right, cobalt-60, encapsulated in long rods, is lowered into a shielded container for shipment to an irradiating plant. Cobalt-60, a byproduct of nuclear fission, emits gamma rays used in food irradiation. Opponents of the process argue that more transportation and handling of nuclear materials will lead to more accidents.



Can Consumers Be Convinced?

Market research shows that consumers are not necessarily unwilling to try irradiated products; they're simply unsure and uninformed. Researchers agree that companies should stress the benefits of irradiation rather than get tangled in technical explanations of the process. Follow those guidelines, says Bahar Gidwani, an analyst with Kidder Peabody, and food irradiation could become a \$1 billion business by the mid-1990s.

"If it's presented as a choice to irradiate or not irradiate, almost nobody will think it's a great idea," says Tony Adams of Campbell Soup, who likens the radiation debate to the water-fluoridation controversy. "You have to get over the irrational response, and you have to build a foundation of understanding."

Market researchers say informed consumers are less apprehensive and more willing to sample irradiated products. Researchers emphasize the need for finely honed, carefully monitored education programs, especially aimed at women. A 1984 Kidder Peabody survey reported that 42 percent of the men, but only 16 percent of the women, would buy irradiated products. Women were more undecided about buying even when they were told that the food would cost no more than regular food and stay fresh longer.

A private research firm, commissioned by the National Marine Fisheries Service, found that consumers can be divided into rejectors (5 percent to 10 percent), acceptors (25 percent to 30 percent), and undecideds (55 percent to 60 percent). The percentages represent consumers' acceptance, based on a description of the technique and how radiation affects foods. When the pollsters described the benefits of irradiation to another group, without delving into the technology, the acceptor score shot up to 72 percent and the rejector tally stayed at 6 percent. Sell the product, the survey concluded, not the process.

A private study for the Department of Energy and the National Pork Producers Council suggests that education can convert some people but may increase the doubts of others. The survey asked opinions about food

irradiation and classified respondents as those with "major," "minor," or "no" concerns, and undecideds. Then researchers explained the attributes of food irradiation and reexamined the groups' attitudes.

In the major-concern class, 9 percent said their fears were alleviated, 3 percent became undecided, and 25 percent said they had minor concerns; the rest retained their major concern. Of those who at first had expressed minor concerns, 20 percent said they had no problems, 3 percent were undecided, and 24 percent developed major concerns.

Among the undecideds, 13 percent expressed no concern, 38 percent developed major concerns, and 22 percent had minor concerns. Of those who had said they had no concern, nearly 40 percent developed major or minor concerns. Researchers speculated that the interviews were less convincing than a consumer-education program would be.

Several studies suggest that companies market the benefits of irradiated foods as an alternative to foods treated with chemicals—an opinion shared by many food executives. The National Marine Fisheries Service study, however, warns against making a hard-sell comparison implying that chemicals are bad. Consumers' stated preference for irradiated foods over chemically treated products, the study says, reflects an anti-chemical rather than pro-radiation stand.

Surveys found other strong selling points, the absence of radiation in foods, the fact that irradiated foods have been fed to patients with immunological disorders, and the appeal to ease world hunger. Some radiation supporters consider the hunger issue to be weak. "A lot of world hunger benefits are overstated," says Richard Greenberg, a food scientist. "Solving world hunger is more of a distribution question than a supply question. They need roads, trucks, and a distribution system." The surveys did not mention whether well-fed Americans who support irradiation to help world hunger would buy the products themselves.

—R.S.

get it in the store," says Welt, who is fond of quoting a New Zealand entomologist to reflect his lack of fondness for bureaucracy. "The one insect that radiation will not destroy is the political mite."

Welt concedes that he has become a lightning rod for opponents of radiation; other food irradiators take a lower profile. He has also become a symbol of the problems that critics warn about. Welt's company is on the EPA Superfund toxic-dump list. Radiation Technology has been cited several times and fined once, and has had its operations suspended twice by the Nuclear Regulatory Commission for license and safety violations. The NRC recently closed one of Welt's plants for 10 days.

Other irradiators have also had brushes with the NRC. The food-irradiation opponents, who have hammered hard at the nuclear-safety issue, have not been loath to publicize those incidents. They argue that more food irradiation means more transporting and handling of nuclear materials—and more accidents.

The opponents have jumped on legislation, proposed in the last two sessions of Congress, that encourages the Government to lease nuclear waste for use as a food-irradiation source. The bills were introduced by Representative Sid Morrison and Senator Slade Gorton, both of Washington; the waste in question is cesium-137, and the Hanford Nuclear Reservation in Richland, Washington, is one of the largest producers of that byproduct. The bills still languish in their respective houses.

The Department of Energy has encouraged the use of cesium-137 for food irradiation as part of its "byproducts-utilization program." Congress allocated \$5 million in the 1986 fiscal year for several Energy Department food-irradiation projects. Unfortunately, it has not yet found a place to build its Cesium Agricultural Commodities Irradiator. At first, the DOE proposed to build it in Miami at an Agriculture Department facility; but Agriculture said the unit would not meet its needs and objectives. Then the DOE made an agreement with the National Food Processors Association to house the unit in the association's new research center in Dublin, California. The association backed out, saying that the project would take too long and be too costly.

The DOE also has been developing a Transportable Commodities Irradiator, which puts a cesium unit on a flatbed truck. The unit, which was due in 1985 but has not yet been completed, would travel to ports and packing houses for irra-

diation research. Longtime critics are joined by some irradiation supporters in hooting at this idea. "It's a boondoggle," says Martin Welt. "It's one of the stupidest things I ever heard of," says Bahar Gidwani of Kidder Peabody.

The Morrison and Gorton bills create another controversy by removing radiation from the FDA's classification as a food additive. Under an amendment passed in 1958, the FDA must approve the safety of a substance before it can be marketed. Critics say the bills would make irradiated foods subject to fewer controls and tests. The bills also preempt states from imposing tougher food-labeling rules than are required by Federal law. The food industry wants the definition switched from "additive" to "process" because, it says, radiation is a process no different from canning or freezing. Opponents retort that the FDA requires the labeling of certain processes, such as pasteurization, because the consumer cannot tell what has been done to the food. Another bill would revoke the regulations for pork, fruits, and vegetables, and would require an independent test on the human health effects before any foods could be irradiated.

When the food industry has entered the political fray, the results have been disconcerting. The attempt to tone down the label on irradiated products only delayed passage of the fruits and vegetables regulation for several months and mobilized opponents who claimed that the industry had something to hide. Pushing the change in classification from "additive" to "process" enabled the critics to play up their demands for more tests. The attempted change seems most incongruous now, since virtually no company takes advantage of existing food-irradiation opportunities.

The industry reduces its risk by not stepping to the forefront of the issue. But it increases its risk by being swept up in matters it cannot control or limit, since it is not leading the food-irradiation drive.

Food-company executives—who must grind their teeth whenever the NRC criticizes an irradiator, or when any nuclear problem gets dragged into the food debate—must make intricate calculations of cost, profit, and consumer acceptance. Joining a coalition can bring them only so far. Companies must decide whether to be firmly identified with irradiation through their products, or step away from it. The teenager won't dance with the girl unless he asks. ■

"If we leave it to the large companies, it may never happen," says the chairman of Radiation Technology.

PUBLIC OPINION MESSAGE

DEAR: SENATOR ABOOD

NAME: DIAMN ALDRICH

TITLE:

ADDRESS: 1466 HANS WAY

CITY: FAIRBANKS

PHONE: 479-6845

ZIP: 99709

BILL NO:

SUBJECT: IRRADIATED FOOD

MESSAGE: PASSING IRRADIATED FOOD OFF ON THE PUBLIC IS A BIG MISTAKE. RUSSIAN ROULETTE IS NOT A GAME TO BE PLAYED WITH OUR HEALTH. I URGE YOU TO SUPPORT SB 355. ALSO SEND A MESSAGE TO WASHINGTON, SUPPORT SJR 33. EOM/HJO/C

POMID: 07145624

DATE: 02/23/88

TIME: 14:56:24

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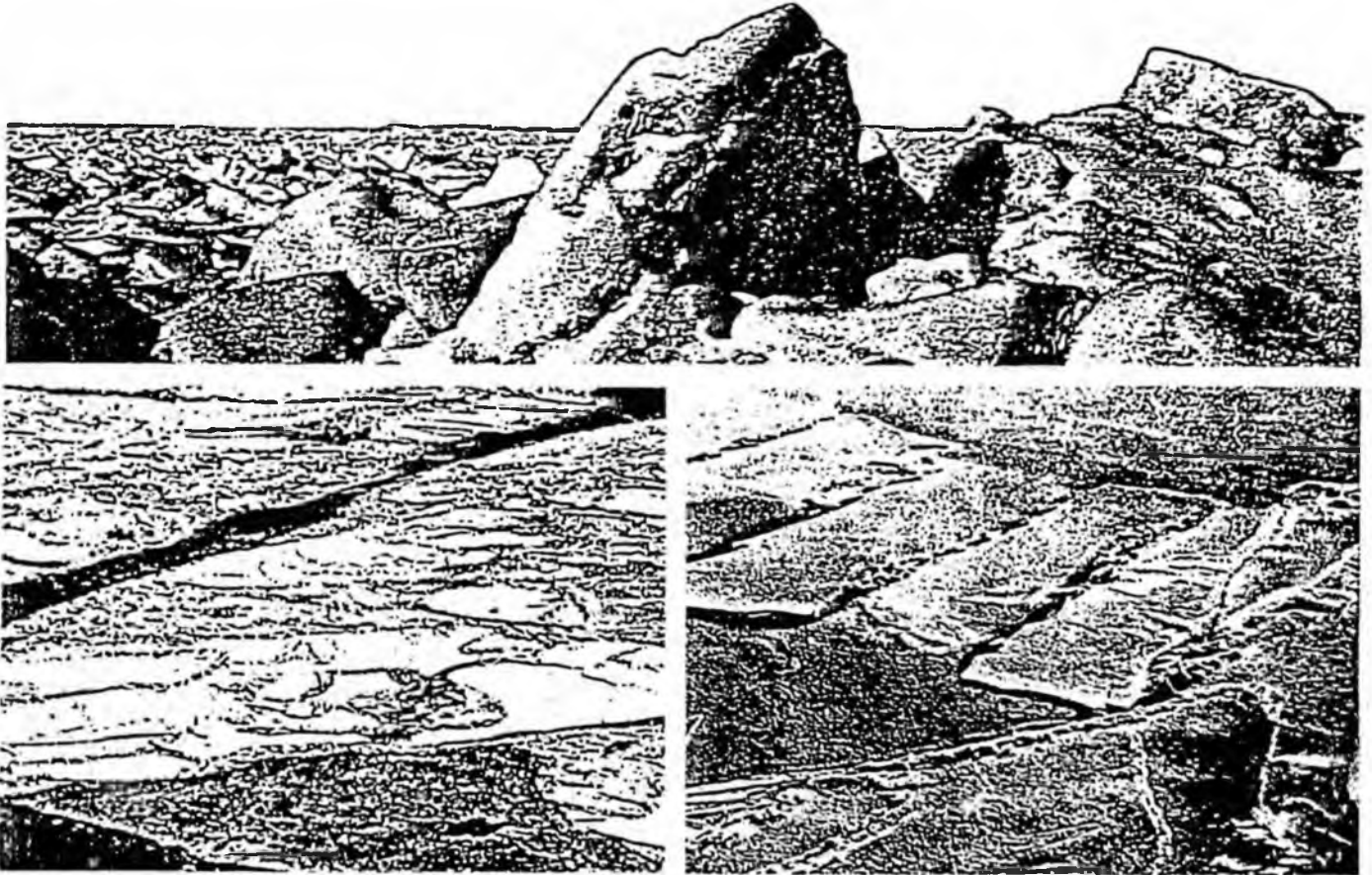
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THE UNITED STATES: AN ARCTIC NATION



**Report of the U.S. Arctic Research Commission
To the President and the Congress
Of the United States of America
For the Period 1 October 1985 - 30 September 1986**

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**January 31, 1987
U.S. Arctic Research Commission**

**3500 South Figueroa, Suite 114
Los Angeles, California 90007**

Preface

The Arctic Research and Policy Act of 1984 (P.L. 98-373) requires that the U.S. Arctic Research Commission, which was established under Section 103(a) of this act, shall submit to the President of the United States and the Congress, not later than January 31 of each year, a report describing its activities and accomplishments during the immediately preceding fiscal year. In fulfillment of this provision of the act, the Commission has prepared the following report covering the period 1 October 1985 through 30 September 1986—fiscal year 1986. (For a description of the creation of the Commission on 28 January 1985 and of its activities during its initial seven months of operation, see *U.S. on the Arctic Rim. Report of the U.S. Arctic Research Commission to the President and the Congress of the United States of America for the Period 1 March—30 September 1985*, Los Angeles, California: U.S. Arctic Research Commission, January 31, 1986.)



Arctic Boundary defined by the Arctic Research and Policy Act of 1984

Adapted from National Issues and Research Priorities in the Arctic Polar Research Board, National Research Council, Washington, D.C. 1985.

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