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Senate

NATIONAL ANTINUCLEAR DAY COMING JUNE 5

Mr. GRAVEL. Mr. President, Albert Einstein once said:

To the village square we must carry the facts of atomic energy.

From there must come America's voice.

Saturday, June 5, is to be a day when that very thing will happen.

On that day, groups in as many as 200 cities throughout the Nation will hold press conferences, lectures, and demonstrations to make Americans aware of the threats that are posed by a nuclear powered economy.

They will demonstrate and explain their own opposition to atomic—fission—energy:

To the unethical accumulation of vast quantities of radioactive wastes, which must be guarded and isolated from the environment for thousands of years;

To the economic threat of ever-increasing centralization of power supplies and of the capital necessary to build nuclear facilities;

To the proliferation of nuclear weapons which will inevitably accompany a worldwide nuclear economy;

To the erosion of civil liberties which seems so likely in the event that plutonium, a deadly poison and a weapons-grade material, becomes a major fuel source.

They will show their fellow Americans that our only effective energy choice in the short run is conservation—and that the best choice in the long run, for economic as well as social reasons, is exploitation of the natural, renewable energy of our Earth, especially solar energy.

"Voices from the Village Square Day" is being organized by the National Intervenorers, led by Robert E. Augustine and John M. Blatt.

Mr. President, I ask unanimous consent that the National Intervenorers' press release concerning this nationwide event be printed in the Record following these remarks. I also ask unanimous consent that the testimony of Dr. John Gofman concerning the threat of low level radioactivity be printed in the Record.

The PRESIDING OFFICER. Without objection, it is so ordered.

(See exhibits 1 and 2.)

Mr. GRAVEL. Mr. President, Dr. Gofman, who is professor emeritus of medical physics at the University of California, shows in his testimony that keeping low level radioactive emissions to a satisfactory level would require a virtually perfect record, completely accident free, by the nuclear industry. This is, of course, too much to expect of any industry, and it is certainly not the kind of record the nuclear industry has established so far.

This testimony indicates the real need for a reassessment of the risks and alleged benefits of nuclear power.

My own bill, S. 1826, the Nuclear Power Reappraisal Act, would provide for just such a reassessment. It would require a 5-year study for the Congress by the Office of Technology Assessment. During that period, operating plants would continue to produce power, and plants under construction would continue to be built. But no new construction licenses would be issued. After Congress received the complete OTA study, it would decide whether to allow resumed licensing of nuclear plants.

A companion bill, H.R. 4971 by Representative HAMILTON FISH, is in the House of Representatives.

EXHIBIT 1

VOICES FROM THE VILLAGE SQUARE DAY

On Saturday, June 5, 1976, people all over the country will be gathering to voice their concern about the hazards of nuclear power.

This, the first "Voices From The Village Square Day", is being organized by the National Intervenorers, a Washington D.C. based coalition of 156 environmental, health, labor, church, and student groups.

Citizens' groups across the country will be holding meetings, press conferences, and demonstrations to show their opposition to the rash proliferation of nuclear power plants that is being forced on the American public.

John M. Blatt, the Executive Director of the group says "The people of this country are beginning to realize that they've been had, that their health and well-being are being sacrificed..."

As Albert Einstein said; "To the village square we must carry the facts of atomic energy. From there must come America's voice".

Citizens interested in participating in or organizing local activities are urged to contact National Intervenorers.

EXHIBIT 2

RADIATION DOSES AND EFFECTS IN A NUCLEAR POWER ECONOMY: MYTHS VS. REALITIES

(By John W. Gofman)

INTRODUCTION

A very wide segment of the public still erroneously believes, after the controversy of the 1969-1972 period over permissible radiation doses, that constructive action has been taken to protect the public against unacceptably high radiation exposure from nuclear power. It is not accidental that the public should be thus deceived into thinking "permissible" radiation doses have been lowered 100-fold. Nevertheless, "permissible" doses have not been lowered at all for public exposure from most aspects of the peaceful atom.

Largely for eyewash, the Atomic Energy Commission recommended a few years ago that the "permissible" dose at the fence line of a "normally-operating" nuclear power plant be reduced from 500 millirems to 5 millirems, obviously a 100-fold reduction. The unsuspecting and unknowledgeable public assumed this meant a lowering overall of the radiation exposure which the developing nuclear industry would be permitted to deliver. Hardly! All other aspects of the industry, including those most likely to deliver appreciable doses of radiation, were not addressed at all by the AEC recommendation.

In 1975, the snoring giant, the Environmental Protection Agency, awoke long enough to make some noises about a broad new look at "permissible" radiation doses from the nuclear fuel cycle. The EPA would perform a Rulemaking on the issue. As of April 1976, the EPA has taken no final action.

If the EPA's Rulemaking document is an indication of how this and future generations shall fare, protected by the EPA instead of the AEC or the defunct Federal Radiation Council, there is indeed small reason for celebration of our environmental protectors in Washington. In announcing its Rulemaking on "permissible" doses, EPA pompously stated:

"These standards [are] to limit radiation doses to the general public and quantities of long-lived radioactive materials in the general environment attributable to planned releases from operations contributing to the generation of electric power through the uranium fuel cycle. These standards are proposed to apply to all operations within the fuel cycle, including the operations of milling, conversion, enrichment, fuel fabrication, light-water cooled reactors, fuel reprocessing, and transportation of radioactive materials in connection with any of these operations."

"At last," thinks the poor unsuspecting member of the public, "some truly definitive action is being taken concerning the radiation exposure standards widely agreed to be unnecessarily high". The phrase "unnecessarily high" is taken from the BEIR Report of the National Academy of Sciences.²

But a closer examination of EPA's proposed methods for setting standards indicates that we are dealing with no more than eyewash again, and with an attempt to allay public concern over the safety of commercial nuclear power.

If EPA really intended to assure that some upper limit of potential public injury were to exist, it would have set some such limit as an objective of its Rulemaking procedure, and constructed its new proposed emission and exposure guidelines such that these limits in cancer deaths and genetic deformities and deaths would not be exceeded.

And indeed, the EPA says its goal is to limit "health effects" (in general, a euphemism for "premature death") from nuclear power to a total of 120 "effects" up to the year 2000. So far, so good. But the catch is that this is a limit for normal operations . . . and the entire thrust of the EPA's Rulemaking procedure is to set standards for nuclear power operations which will permit the nuclear industry to deliver to the public virtually any dose it finds convenient for its operations.

Properly, the skeptical person would insist that, "A government agency simply would not be party to such a procedure." Let us therefore examine the EPA proposal for standards.

The EPA proposes that its new standards shall address the normal operation of the uranium fuel cycle, with its planned releases of radioactive poisons. The definitions of "planned releases" and "normal operations" are purposely left vague. It becomes therefore totally doubtful that the expressed goal of limiting public exposure could ever be meaningfully implemented with the proposed EPA guidelines.

Through the simple, and possibly cynical, twisting of the word "planned", a vast loophole is left for the nuclear industry, a loophole which can render the entire Rulemaking a travesty upon its professed goal of limiting public exposure. Who will specify, in the real world, whether releases of radioactivity exceeding the goals are truly planned? If the releases are inconveniently large, one has only to label them "non-normal" or "unplanned", and then no violation of standards will have occurred. That EPA has every intention of permitting such excesses is evidenced by the following direct EPA statement:

"A variance is proposed to permit temporary operation in the presence of unusual operating conditions so as to assure the orderly delivery of power."

And further:

"The proposed standards are designed to govern regulation of the industry under normal operation, and therefore a variance is provided to be exercised by the regulatory agency, to accommodate unusual and temporary conditions of facility operations which deviate from such planned normal operation. This provision is important because the standards, although they can be satisfied with a wide margin at most facilities, are not intended to provide for operating flexibility under unusual operating situations. Unusual conditions have not been addressed by these considerations, which are intended to define currently acceptable levels of normal operation only, and not acceptable levels of unusual operation. It is anticipated that such unusual operation will occur, at some facilities more often than at others, and that every effort will be made to minimize such operation by the regulatory agency." (page 69).

Thus, in its finest hour of generating a masterpiece of bureaucratise-gobbledygook, the EPA has told us, after translation to English, that it proposes to permit the public to receive any dose of radiation the nuclear industry finds it convenient (for itself) to deliver.

And as a gesture on EPA's part that this freedom will not be sorely abused by the nuclear industry, EPA has bared its terrifying regulatory fangs with the statement that "Every effort will be made to minimize such operation by the regulatory agency." Fear-some, indeed, to the nuclear industry.

EPA endeavored to wriggle out of the em-

barrassment of this "gift" to the nuclear industry (and hazard to people) by saying that the Rulemaking document is not intended to address the "accident" situation. That is no answer at all, for there is a vast potential gap between the "planned release" and the "accident". In this vast gap, a loophole is created by EPA which can create great excesses of public exposure and radioactive contamination of the environment, while all the time the "standards" will have been met—all achieved by the simple definition (or re-definition when convenient) of the words "planned releases".

There is, of course, a fundamental reason for the grossly defective treatment of this issue in the EPA statement. It is clear, from a reading of the EPA document, that EPA has bought the inevitability of an increasingly large nuclear electricity industry. In fact, much of the EPA document on proposed standards-setting reads more like a prospectus for the sale of stock in a growing nuclear industry corporation.

(And the EPA does expect it to grow a lot; on page 8, the EPA states that the nuclear industry is projected to grow to 1,200 gigawatts—or 1,200 of the thousand-megawatt plants—by the year 2000.)

Whenever a regulatory agency begins to grant variances to industry, regulation becomes a meaningless facade. In time, virtually anything is permissible. It is doubtful, to say the least, that regulators can deal effectively with powerful interests whose real philosophy seems to be, "You can always make more people. We have too many now anyway. But dollars are hard to come by."

Certainly the EPA realizes that the long-term experience-base for the new huge (~1,000 MWe) nuclear plants is quite inadequate, particularly with respect to aging components, human errors, poor human judgments, and mechanical failures, so that no one really knows what the future operating experience will be. And EPA, clearly, is not about to embarrass the nuclear industry with a set of standards which experience may show to be unworkable.

Thus, a neat solution is achieved (of course having absolutely nothing to do with protection of the public from radiation injury) by preparing to label all untoward future experience as "unusual", "temporary", "not normal".

Besides, it will of course become arguable, once the die is cast, that shutting down nuclear facilities will cause even greater adverse health, economic, and social impacts than the human damage from extra radiation. Given the permission for "variances" plus the public-relations appeal of "not upsetting the health of the economy", it becomes clear that the new EPA standards are largely an exercise in futility with respect to limiting the public's exposure to ionizing radiation.

In summary, by omitting all the "unusual" and "non-normal" operating features, EPA is really saying, in effect, it hasn't the foggiest notion of what real-life radiation doses will occur, nor does it plan to set standards in any meaningful manner with the slightest possibility of inconveniencing the nuclear industry.

BENEFIT VERSUS RISK: THE EPA'S ELASTIC EQUATION

The EPA presumably has done some thinking on the subject of what risks are tolerable for the public, both of this and future generations. At one point, the draft document states:

"The standards for environmental burdens of specific long-lived radionuclides are expressed in terms of the quantity of electricity produced in order that society will be assured that the risk which is associated with any long-term environmental burden is incurred only in return for a beneficial product: electrical power."

This is the old benefit: risk balancing, which justifies premeditated random murder of some individuals for an ostensible benefit (electric power) to society.

Whatever the lack of morality of this procedure, it is of interest to examine what goes

into the juggling act as the EPA attempts to balance the benefit: risk equation. The EPA document is quite reassuring that we know how to set standards which will make for the acceptable use of nuclear power on a large scale. The EPA is vanishingly thin on evidence for this claim, but it is made nonetheless.

Since EPA has reached that conclusion, it is implied:

- (a) EPA can measure the benefit (power).
- (b) EPA knows clearly the cost in fatalities (genetic or cancer) for specific permitted levels of radioactive releases.

The latter, however, is not possible. There are great uncertainties, presently beyond scientific resolution, about the real magnitude both of the somatic (cancer) effect and the genetic effect of ionizing radiation.

For example, with respect to fatal cancer production by ionizing radiation, it is known that a period exists, known as the latent period, before the radiation-induced cancers start to appear. This period is of the order of 10 years (maybe as much as 20 years for certain cancers). Thereafter, fatalities occur each year in exposed populations. What is not known is whether the cancers continue to occur for 20 years, 30 years, or for the entire remaining lifespan of members of the irradiated populations.

This uncertainty has very large implications for the total cost in human lives lost to radiation-induced cancer. Thus, by way of illustration, in 1972 the BEIR Committee of the National Academy of Sciences rashly assumed (on no evidence whatever) that for irradiation of infants-in-utero, the cancer-producing effect is over when the child reaches the age of 10 years. In fact, the excess cancer risk may very well exist for such exposed infants for the entire lifespan, rather than for 10 years.

The uncertainty in this one factor, namely, how long the radiation effect lasts, can alter the numbers of expected radiation-induced cancer deaths by ten times.³ Is it totally coincidental that the BEIR Committee chose to minimize the radiation-induced cancers? The U.S. National Academy of Sciences does not often embarrass government-favored programs.

Even with such major uncertainties on the risk side of the equation, the EPA seems to be assured it has the wisdom to set standards and to weigh benefit and risk. If the cancer effect does turn out to be ten times higher, how will the EPA handle the elastic benefit vs. risk equation? Will electric power suddenly become a "benefit" worth ten times as many cancers?

THE HANDLING OF PLUTONIUM: A FAR-FETCHED PROMISE

There is little doubt that Plutonium produced in power reactors is a uniquely potent agent for the development of lung cancer, if the Plutonium gets into fine particles which can be inhaled.

Recently, Gofman¹¹ has estimated that in a full Plutonium breeder economy, perfection of Plutonium containment to 99.99% would still permit enough Plutonium to escape into the environment to cause lung cancer fatalities in numbers like 500,000 annually in the USA alone.

"Nonsense," say the nuclear promoters, "We will contain the Plutonium we handle to one part in a billion, not one part in 10,000!" And with this, they scoff at the prospect of 500,000 extra lung cancer deaths each year as part of our nuclear future.

Indeed, in its Rulemaking document for new radiation guidelines, the EPA estimates that release of only one part in one billion of the inventory of transuranics (including Plutonium) is achievable with "continuation of presently used best practicable control of release of transuranics".

Inasmuch as EPA is referring to "presently used best practicable control", we must presume that somewhere, somehow, EPA can produce the basis for its assurances. But a little arithmetic here can show the absurdity, the massive absurdity, of the EPA state-

ment.

At the present time we have a nuclear industry of about 30 Gigawatts. The EPA's proposed guidelines would suggest that the annual release of Plutonium and other transuranics for 30 Gigawatts would be about 0.25 grams. The EPA claims that "presently used best practicable control" achieves this.

The weapons testing in the atmosphere deposited some 700 pounds of Plutonium on the lower 48 states of the USA. Since there are 454 grams in a pound, this represents 318,000 grams of Plutonium in the U.S. environment. Therefore, the EPA, to prove its contention, needs an ability to measure 0.25 grams against a background of 318,000 grams—a background about 1,270,000 times greater.

Anyone familiar with measurement realizes what an exorbitantly difficult problem it is to measure something meaningfully when that something is 1/10 of the background. Yet EPA is providing assurances, in effect, that it knows how to do something which requires a hundred thousand fold better measurement ability than that which is exorbitantly difficult.

It would appear that EPA simply doesn't know within a factor of 100,000 what containment of Plutonium and other transuranics can be credibly planned, even without addressing the question of unplanned releases.

Nor can the EPA possibly turn to the military experience with Plutonium in order to show that containment to one part per billion is achievable.

But there is a fallacious technique commonly used to make soothing estimates. An air monitor is placed outside a specific industrial exhaust. If a low activity is found in that monitor, the entire industry is given a clean bill of health with respect to its releases. At the same time, leaky barrels or leaky tanks elsewhere on that industrial site can be releasing Plutonium into the uncontrolled environment. But these leaks don't register on that one monitor, and hence a false optimism occurs. Precisely this situation occurred at the Rocky Flats Plutonium Plant. Stack monitors will also overlook Plutonium tracked out of plants on shoes—which has also happened.

The bottom line in such matters is careful and widespread environmental monitoring. And for the reasons cited above, EPA can not possibly even approach by a large factor the capability required to support its extravagant, dangerous, and misleading claims.

It is important to note that under President Ford's new Fiscal 1977 budget, the EPA is reducing its manpower and program for monitoring ionizing radiation in the environment. The responsibility for monitoring nuclear power pollution is to be left mostly with the Nuclear Regulatory Commission and ERDA. We have the mouse guarding the cheese again.

IN SUMMARY

Perhaps the best way to describe the promises and reassurances of both governmental agencies and other nuclear promoters concerning likely future radiation doses, fatal cancers, and genetic damage, is with one idiotic statement which summarizes their whole pro-nuclear case:

"If everything goes perfectly, then everything will go perfectly."

Dr. Gofman's complete paper is available from Senator Gravel, 3317 Dirksen Building, U.S. Senate, Washington DC, 20510

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Mike Gravel

U. S. S.

PLEASE
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