515 West Point Avenue
University City, MO 63130
July 16, 1980

Director, Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Sir:

Thank you for giving citizens the opportunity to comment on the proposed NRC/DOE/Dow/Commonwealth Edison chemical decontamination demonstration project at Dresden Unit One, as described in the Draft Environmental Statement (Draft EIS), NUREG-0686, issued in May 1980. However, I must protest once again that the public is being asked to forego answers to questions affecting health and safety because of Dow's proprietary rights. The only scientists who know the ingredients of Dow's Nuclear Solvent-1 are those employed by Dow Chemical, Commonwealth Edison, DOE or the NRC -- and these are the very scientists who have been committed to the Dresden project and NS-1 for at least several years. I continue to believe that scientists without a financial or emotional commitment to this project should be given access to the data necessary to evaluate its potential impact.

My concerns about the Draft EIS and the proposed decontamination center around both facts that are known and those that are not.

A. How can anyone be sure an accident will not occur during the decontamination?

We know that, contrary to basic design and operating guidelines for nuclear power plants, some areas of the Dresden reactor coolant pressure boundary have not been inspected for seven years. Because of extremely high radiation fields at Dresden One, caused by the accumulation of crud, Commonwealth Edison "requested and was granted relief from some inservice inspection requirements in 1973." (Draft EIS, p. 2-5) That is, for five years prior to the shutdown in November 1978 for the proposed decontamination and NRC-mandated retrofitting, the NRC had "waive(d) inspection requirements for safety-related components in plant locations where significant radiation exposures could occur." ("Identification of Unresolved Safety Issues Relating to Nuclear Power Plants," NUREG-0610, January 1979, p. 44). As a result, critical nozzles, an estimated 40 to 50 primary coolant pipe welds, beltline welds on the reactor pressure vessel itself, and no doubt other safety-significant components have not been inspected for several years. (Draft EIS, pp. 4-1 and 5-2).

How, then, can anyone accurately predict the potential volume or locations of leakage during the proposed 100-hour flushing? Who knows what will happen when five or ten tons or more of a caustic, chelate-based solvent come in contact with an embrittled twenty-year-old vessel, corroded heat exchangers and pumps, five miles of convoluted piping, etc. -- with valves, welds and components fabricated out of literally countless different metals and alloys?

If this system-wide demonstration project is not an experiment, as the NRC claims on the first-page-four of the Appendix, why is the federal government helping to fund it? If it is not an experiment, why are there so many unknowns?

As "decontamination of reactors" was described by the NRC's Advisory Committee on Reactor Safeguards in its March 21, 1979, list of unresolved generic items of safety significance: "At this time the information on full scale decontamination (of primary reactor systems) is limited. Examples of potential problems include such items as handling of decontamination solutions, potential hideout of radioactive products, enhanced corrosion and crud formation following decontamination, and the possible incompatibility of the different alloys in the pressure boundary with the decontamination solutions."

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B. In the event of an accident during the decontamination, what will be the effect upon

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the workers and the public nearby?

Apparently no one has studied the synergistic effects of industrial solvents mixed with radiation. Although chelates are administered to workers who have accidentally swallowed plutonium or mercury, etc., essential trace elements normally found in biological tissues or cells are subsequently provided to replace those materials inadvertently removed. And the quantities involved in the therapeutic use of chelates are of course miniscule compared to this project.

No one has denied there will be leakage within the plant -- there always has been. Workers will therefore be exposed to unknown health risks, not only during the flushing, but during the evaporation, solidification, and shipment of the wastes, as well. Furthermore, if the chelates are broken down, as they should be to protect the public, this additional step will also increase the workers' risks. At this point I am absolutely unwilling to participate in the benefit/risk game. I firmly believe that neither the workers nor the public should be placed at risk!

C. What radioactive wastes and other toxic chemicals are apt to be released to the atmosphere during the evaporation, and in what quantities?

There seems to have been some debate among scientists at the EPA, NRC and ERDA about whether the presence of radionuclides in unexpected places at the Maxey Flats, Kentucky, radioactive waste burial site could be blamed on the ability of nuclides to migrate at subsurface levels (perhaps, it was hypothesized, because of the presence of chelates) or whether the evaporator plume from the solidification process was responsible for the dispersion. (EPA/ORP 520/3-75-021 and EPA-520/5-76/020)

D. Does anyone really know what it is inside the primary cooling system that you want to let out? Is this perhaps the ultimate Pandora's box? What is the composition of the crud?

Answers to these questions are important because they affect the reliability of the NRC's prediction that "the longest lived significant isotope that will be solidified after the decontamination is Co-60 with half-life of 5.2 years. Tests have been performed to demonstrate that the stability of the solid polymer will not substantially alter for over 50 years, corresponding to 10 half-lives of Co-60." (Appendix, second-page-five).

1. Fission products:

Although a few fission products are listed on page 2-2 among the radionuclides expected to be present in the Dresden crud -- namely, cerium-141 (half-life of 32 days), cerium-144 and protactinium-144 (290 days), and rubidium-103 (41 days), plus three additional curies of "MFP" or mixed fission products -- is it not highly probable that a far greater variety of isotopes is present, and a great deal more radioactivity? And is it not possible that some of the corrosion products, fission products, and actinides in the crud may have half-lives longer than cobalt-60's?

a. Assuming the amount of fission products deposited along the inner surfaces of the Dresden piping is dependent in large part upon the amount of fuel rod cladding failures, the prognosis for Dresden's crud is not good. In several publications cladding failures at Dresden One are specifically mentioned.

(1) In the first place, stainless steel cladding, used at least in the initial years at Dresden, is virtually obsolete. The only boiling water reactor still using stainless steel clad fuel is the tiny 47 MWe reactor at LaCrosse, Wisconsin.

"Stainless steel is no longer the preferred cladding material for most light water reactors because it absorbs more neutrons than does Zirca-

loy. ... In boiling water reactors, stress corrosion cracking of stainless steel during normal operation is an additional incentive to use Zircaloy which is not susceptible to this problem." (from a letter to me from Harold Denton, Director, Office of Nuclear Reactor Regulation, dated July 30, 1979; signed by Edson Case.)

(2) In an analysis in a GE report of iodine leakage rates at BWRs, the stainless-steel-clad fuel at Dresden One was cited as having experienced "severe" defects" in March 1965. (J. M. Skarpelos and R. S. Gilbert, "Technical Derivation of BWR 1971 Design Basis Radioactive Material Source Terms," NEDO-10871, General Electric, March 1973, p. 4-1) I do not know in what year the switch to Zircaloy cladding occurred, nor do I know what percent of the cladding has failed each year since.

(3) Dresden One is not unique in having cladding problems, of course. But why is this history of cladding failure and leakage not reflected in the NRC's projections of the composition of the crud?

As explained by B.C.J. Neil of Ontario Hydro at a conference on radiation shielding several years ago: "Volatile and gaseous fission products such as radioiodines will diffuse to and escape from the minutest holes and cracks in a fuel sheath (cladding). Water soluble fission products will dissolve in any water which enters the fuel sheath through a hole or crack especially when the fuel is temperature cycled (i.e., at power changes, shutdowns, or startups)." (from "The Contribution of Fission Products to Radiation Fields in a Pressurized Heavy Water Reactor," pp. 402-3. Although the title refers to a heavy water reactor, much of the paper deals with problems common to all water-cooled reactors.)

While much of the escaped fission products, as well as byproducts of tramp uranium, solid daughters of noble gases, etc., will stay suspended in the cooling water and will be filtered out for burial or will be released to the environment, some will settle out and become deposited as a part of the crud. According to Neil, at one plant which had experienced fuel rod cladding failures, the radiation fields during shutdown were increased in some parts of the reactor more because of the presence of fission products (such as zirconium-95 and its daughter, niobium-95, and Lanthanum-140, daughter of barium-140, than because of corrosion products.

(4) Cladding failures during the first decade of operation at Dresden are also described in a Bureau of Radiological Health study: "At Dresden, much of the fission product activity in primary coolant water is attributed to uranium that had entered the primary coolant several years previously from failed fuel elements." (B. Kahn, et al., "Radiological Surveillance Studies at a Boiling Water Nuclear Power Reactor," EPA: BRH/DER 70-1, March 1970, p. 6)

b. Just as there are hundreds of isotopes within a fissioning uranium core at any one time, so may a great variety of these have escaped during the operating life of a reactor to seek refuge in the crud. And they are of all ages. Some examples:

(1) Cesium:

According to a private communication sent in June 1975 to the authors of an EPRI study on the buildup of radioactivity, about 10% of the radioactivity released from a specimen of nickel-iron spinel deposited in the stainless steel clean-up piping at Dresden One (found during a decontamination of the clean-up loop) was attributed to cesium-34 (with a half-life of 2 years) and cesium-137 (30 years). The major portion of the radioac-

tivity came from cobalt-60. (S. G. Sawochka, et al., "Primary System Shutdown Radiation Levels at Nuclear Power Generating Stations," EPRI # 404-2, p. 18.4, based on communication from J. S. Scott.. Dec., 1975).

While attempting to extrapolate any meaningful projections from just one small specimen of crud at Dresden may seem grossly unscientific, apparently the few isotopic analyses available to the nuclear industry are not much more inclusive. One of the few primary loop crud deposits analyzed for isotopic information for the above EPRI study, for example, was retrieved from Indian Point One, and seems to be no larger than 4.5 square centimeters. By the way, the gamma dose rate of this small collection of mostly cobalt-60 measured one rem an hour! (EPRI # 404-2, p. 9.7)

Perhaps this paucity of data explains some of the EPRI authors' pessimism: "In summary, accurate prediction of radiation levels on out-of-core surfaces or assessment of the effects on shutdown radiation levels of plant operating practices or minor design variations in current generation BWRs and PWRs are not considered possible within the state-of-the-art." (Op. cit., p. 58)

(2) Iodine:

In an enclosure to an NRC memorandum from G. Knighton, Chief, Environmental Branch, to D. Ziemann, Chief, Operating Reactors Branch #2, dated February 13, 1979, the manner in which fission products may have become an integral part of the Dresden crud is described as follows: "Iodines and other volatile fission products which may have plated out on the primary system surfaces will have decayed to insignificant levels before the cleaning begins so that these isotopes are generally not present." (p. 7)

On page 4-7 of the Draft EIS a similar statement appears: "All radioactive iodine isotopes have been decayed to insignificant levels." What about iodine-129 which has a half-life of 17 million years?

(3) Zirconium:

While I have seen zirconium isotopes in lists of both corrosion products and fission products, zirconium clearly plays a role in helping to clog up a reactor, regardless of how it's labeled. And while I have not read specifically of Zircaloy cladding failures at Dresden One, there is no reason to think this reactor alone would have been spared.

Since zirconium-95 is listed as one of the isotopes expected to be present in the crud at Dresden, is it possible that zirconium-93 may be present, too? Zirconium-95 has a half-life of 63 days; zirconium-93 has a half-life of 900,000 years. Do you expect the radioactive zirconium to be present as the result of particles sloughed off of failed Zircaloy cladding, or as a fission product, or both?

(4) Transuranics:

While not technically fission products, transuranics are byproducts of the fissioning of uranium. (I am not meant to understand that sentence.)

The Bureau of Radiological Health's environmental surveillance report on Dresden One includes an especially important observation: Although the alpha-particle spectrometer used to study the Dresden primary coolant in 1968 was apparently only sophisticated enough to be able to identify one

group of transuranics in the primary coolant, the presence of one probably means others would have escaped into the coolant, too. Would this not also mean that transuranics could be in the crud as well? The BRH scientists attributed the group of alpha particles to curium-242. (BRH/DER 70-1, p. 7) Curium-242 has a half-life of 163 days, but many other transuranics will be around for a lot longer. Such as plutonium.

2. Corrosion products:

a. Should there not have been a long list of corrosion products amid the predominant radionuclides expected to be present in the oxide layer at Dresden, on page 2-2, Table I, of the Draft EIS?

A list of the corrosion products activated (irradiated) by stray neutron bombardment within most nuclear reactors reads almost like the periodic table of elements. There's not much missing. In the Draft EIS, however, the only corrosion products listed are cobalt-57, 58 and 60; zirconium-95; and manganese-54. Perhaps because Dresden One has been shut down for a year and a half, some of the most common, shorter-lived corrosion products may have been expected to have decayed to insignificant levels -- though cobalt-58 is listed and it has a half-life of only 72 days.

If there is to be a thorough assessment of the risks of dissolving crud from the interior of a reactor, and bringing it out into the human (as supposedly distinct from the worker) environment, should it not include a far wider range of corrosion products?

(1) The following corrosion products have been specifically identified in various reports about Dresden One -- that is, over and above the few mentioned in the Draft EIS: iron-59 (half-life of 45 days), iron-55 (2.7 years), chromium-51 (28 days), copper-64 (13 hours), Manganese-56 (2.6 hours), nickel-65 (244 days), zinc-69 (13.7 hours), zinc-65 (2.55 hours; a corrosion product of Admiralty, for example, with which the Dresden One condenser was tubed until 1969), sodium-24 (15 hours), phosphorus-32 (14 days), silver-110m (253 days), cobalt-57 (271 days), tantalum-182 (115 days). (a compilation from EPRI # 404-2, December 1976; BRH/DER 70-1, March 1970; and General Electric # NEDO-10871, March 1973. Not included in these studies are coolant activation products, such as nitrogen-13, 16, and 17, oxgen-19, and fluorine-18.)

(2) In addition, the following elements were listed by the Atomic Energy Commission in WASH-1258 among "corrosion products released to the primary coolant" in boiling water reactors: silicon, carbon, vanadium, titanium, sulfur, lithium, tin, tungsten, and molybdenum. ("Final Environmental Statement Concerning Proposed Rule Making Action: Numerical Guides for ... the Criterion 'As Low As Practicable' ... in ... Effluents," July 1973, Volume 2, p. A-4)

b. And aren't many corrosion products long-lived? For example:

(1) Carbon-14:

Is it not possible that long-lived isotopes of some of the elements mentioned above would be found in the Dresden crud if it were isotopically analyzed, specifically testing for those components? Once again, my comments about the composition of the crud are aimed at two basic questions addressed in the Draft EIS: the amount of radioactivity in the crud, and the potential persistence of its hazard in the human environment.

Apparently cobalt-60 is so prevalent because it is the most common activation product of the natural cobalt that occurs to some extent in almost all iron and nickel alloys, as well as in stainless and carbon steels. Is

it possible that carbon-14 may be an activation product of carbon steel, a material no doubt present at Dresden, such as in the condenser. If so, might some of the carbon-14 have ended up in the oxide layer?

(2) Nickel-63:

According to the EPRI report mentioned above on the buildup of radioactivity, approximately 200 pounds per year of nickel is released into the Dresden One reactor as the result of the corrosion of Dresden's copper-nickel and Monel feedwater heaters, an amount "at least an order of magnitude greater than that at current generation BWRs with stainless steel feedwater heaters. (EPRI # 404-2, p. 18-4) The report explains that this causes the production of more cobalt-58 and 60.

Does it not also mean that nickel-63 may be produced, too? Nickel-63 has a half-life of 92 years. I first read of nickel-63 in lecture notes of health physicist Karl Z. Morgan. He listed cobalt-60, nickel-63 and iron-59 as the most common corrosion products. Apparently at least some NRC staff members expect nickel-63 to be present in the Dresden crud also. In the NRC memorandum mentioned above, dated February 13, 1979, George Knighton reports as follows:

> "By letter dated December 27, 1978, the licensee (Commonwealth Edison) has committed to analyzing the spent decontamination solvent to determine the transuranic nuclide content of the solidified waste. The licensee also committed to sampling the demineralizer discharge product for Fe-55 and Ni-63 at the beginning and end of the waste processing cycle to ensure that no Fe-55 or Ni-63 is transferred to Dresden 1 radwaste or Dresden Units 2 or 3."

While the processes involved in analyzing, ferreting out and keeping the transuranics, iron and nickel isolated are not at all clear, the fact that they may indeed be present surely is.

3. According to page 15 of the Appendix, to the Draft EIS, the Electric Power Research Institute is presently sponsoring research by Battelle Northwest to develop "a weaker but more frequent decontamination process on line." (emphasis added). I would certainly hope that neither the NRC nor DOE would allow its licensees to use non-biodegradable chelates while a plant is on line -- or even during a routine refueling or maintenance shutdown -- unless the uranium core is removed in advance (though cores, too, become crud encrusted), and unless the decontamination effluent is kept isolated from the rest of the plant's liquid radwastes so that the chelates can be broken down before shipment and burial of the corrosion/fission products.

B. Is it really a good idea to bond chelates to the Dresden crud -- even if the pipe interiors get cleaner?

Scientists already know that chelating agents, such as those included in Dow's NS-1, can cause the accelerated migration of radionuclides through the environment. The NRC staff says it does not have "field or laboratory tests which quantify the migration potential of radionuclides associated with Dow solvent...." (Draft EIS, Appendix, first-page-two). On the contrary, field data do exist which demonstrate that radionuclides bonded to EDTA, an ingredient of NS-1, have migrated through the environment at a rate far faster than that expected if the chelates were not present. The very qualities which make chelates effective as solvents -- their ability to form clawlike multiple bonds with a metal ion, enabling them to dissolve normally insoluble metal oxides and to keep them in solution -- are the same qualities that make them a persistent threat in the environment.

To quote from the abstract of a study by Means, Kucak and Crerar recently published

in England:

> "Multidentate chelating agents such as NTA, EDTA and DTPA are receiving widespread use in a variety of industrial applications and are entering natural water systems. The presence of these chelates in the environment can be undesirable because they solubilise toxic heavy metals. We have analysed the relative biodegradabilities of NTA, EDTA and DTPA in several different chemical environments. The objective was to determine whether any particular chelate is significantly more biodegradable than the others and therefore more desirable from an environmental point of view. ... Degradation rates of all three chelates are not rapid enough, even under ideal laboratory conditions, to preclude concern about their release to the environment." (J. L. Means, et al., "Relative Degradation Rates of NTA, EDTA and DTPA and Environmental Implications," Environmental Pollution (Series B), Vol. 1 (1980), pp. 45-60)

In the body of the paper a compendium of the primary hazards involved in the use of chelates includes the following:

> "While chelates are used because of their powerful metal-binding properties, it is this same characteristic which may have undesirable environmental consequences. For example, EDTA, which is used in nuclear decontamination operations, is causing the migration of ^{60}Co from intermediate-level waste disposal pits and trenches in the Oak Ridge National Laboratory (ORNL) burial grounds. Because it forms extremely strong complexes with rare earths and actinides, EDTA and similar chelates may also be contributing to the mobilisation of these radionuclides from various terrestrial radioactive waste disposal sites in the USA. ... Indeed, the presence of significant concentrations of EDTA in 12- to 15-year old radioactive waste at ORNL attests to its persistence. Therefore, wherever EDTA and similar compounds have been introduced into the natural environment, the aqueous transport of transition metals, rare earths and transuranics, which characteristically form the most stable complexes with chelates, will be expected to occur. ...
>
> "Also, chelates may degrade into compounds which still possess strong metal-binding properties, although probably weaker than the original complexing agent. ...
>
> "In addition to increasing the solubility of heavy metals, chelates can further increase the uptake of these metals by plants and consequently increase their ecological recycling rates and the possibility of their entering human food chains. If chelates are present in domestic wastes, they may dissolve copper, lead and iron from plumbing systems and sewage effluents and/or adversely affect sewage plant efficiency."

That last sentence might make one wonder about the wisdom of putting Dresden One back on line after the cleaning, though I have heard that Commonwealth Edison may not intend to take that action at any rate, decontamination or not. Apparently the cost of retrofitting much of the obsolete equipment to bring it into compliance with NRC requirements may be economically unjustifiable.

Although the full range of components of Dow's NS-1 is not available to the public, in a letter dated April 18, 1980, to U.S. Senator Howard Cannon from Nevada, the DOE in Washington, D.C. made the following statement, based on information provided from the DOE's Idaho Operations Office:

> "The decontamination solvent and first water rinses will be collected and processed by evaporation. The resulting liquid waste is estimated to be 60,000 gallons, containing approximately 15 percent ethylenediaminetetra-

acetic acid (EDTA). This liquid waste will be solidified using a proprietary Dow process using polyester resins."

Whether that means 15% of the 60,000 gallon sludge (the Draft EIS estimates 20,000 gallons on page 4-6) or 15% of the Dow solvent, I do not know. Nevertheless, the remainder of the letter to Senator Cannon reveals many other important facts and opinions:

"In general, concerns about the disposal of decontaminating agents like EDTA by shallow land burial are appropriate and shared by the Department of Energy. The Department is currently sponsoring the following related research programs:

1. The quantitative effect of agents such as EDTA upon the mobility of radionuclides in the soil is being determined.

2. Techniques are being developed to stabilize old burial trenches.

3. Techniques are being developed to destroy organic compounds such as EDTA. One such method would result in a final product encased in glass.

"Disposing of the waste from the decontamination of Dresden I at the Beatty site, however, should not pose a significant hazard. The Dow resin is water repellent, and the lack of water at the Beatty site will severely limit any migration of radioactive waste. In addition, the predominate nuclide is cobalt-60, which has a 5.2 year half-life.

"The Dresden I decontamination process will probably not be used to decontaminate other reactors. The process is applicable only to boiling water reactors, and the proposed process is not economical. The sponsoring utility, Commonwealth Edison, is in fact considering a different process for Dresden II." (from Sheldon Meyers, Deputy Assistant Secretary for Nuclear Waste Management, DOE. Original signed by R. G. Romatowski)

Even just one or two of the above statements alone should provide reason enough for the Dresden One project to be postponed. Data unearthed (!) by the Department of Energy after the crud has been bonded to the chelates and brought into the environment may be too late.

F. Does anyone know for how long Dow's solidifying plastic resins will be able to keep chelated radioactive wastes "solidified"?

I don't know how to comment on the reports of laboratory tests performed by Dow of its own solidification agent other than cynically. Nevertheless, even without being able to unscramble which Dow and Brookhaven tests were which in the Draft EIS, it seems clear that some cobalt-60 can and did begin leaching out of the radioactive waste/Dow NS-1/Dow polymer matrix when immersed in pure distilled water in only one week! Although none of the solidification tests was trying to simulate burial ground conditions, do they not all indicate that the Dow matrix is indeed porous and that chelated cobalt-60 remains highly mobile?

If one adds to those laboratory studies the field data from Oak Ridge, Tennessee (Means et al., Science, Vol. 200, pp. 1477-1481), Maxey Flats, Kentucky (research in progress at the U. S. Geological Survey in Denver, Battelle - Columbus Laboratories, and Brookhaven National Laboratory), and West Valley, New York (research in progress at BNL), can anyone still be wondering whether it is wise to experiment in nature with huge quantities of Dow's plastic resins to see if they can really keep huge quantities of chelates from keeping huge quantities of radionuclides in solution -- as the chelates apparently are wont to do?

What is the expected lifetime of the Dow vinyl-ester-styrene solidifying agent itself

under burial conditions, and when subjected to radiation and chelates? As studies in California, South Dakota and Illinois have shown, data collected in Oklahoma also indicate that "low levels of many potentially undesirable organic compounds were being contributed to groundwater within and immediately under the Norman (Oklahoma) landfill by solid waste deposited in this landfill." (W. J. Dunlap et al., from a symposium on "Gas and Leachate from Landfills," EPA-600/9-76-004, March 1976, p. 105. Emphasis added.) As the Dow solidification agent breaks down, could it, too, release components that in themselves may bond onto the Dresden radionuclides and other wastes already at Hanford and Beatty, adding to the migration problem?

G. Can anyone be sure the Washington and Nevada sites will remain dry?

A U.S. General Accounting Office report lists characteristics identified by earth scientists about America's low-level waste dumps for which inadequate data have been collected, and "about which not enough is known to reasonably predict the migration direction and rate (of radioactivity movement) or to determine whether reasonable predictions can be made." Major information lacking about the Hanford site includes: "rate of infiltration (the amount of water that is not evaporated or transpired and is free to move downward), rate and direction of ground water movement, and interconnection between shallow and deep aquifers." The data needed for the Beatty site include: "rate of infiltration, and direction and rate of ground water movement." ("Improvements Needed in the Land Disposal of Radioactive Wastes -- A Problem of Centuries," RED-76-54. January 12, 1976; pp. 13 and 45-46.)

The same report describes the following: "Through 1974 over 140 billion gallons of liquid waste containing about 5 million curies have been discharged into the ground at Savannah River, Idaho, and Hanford with the intention that the radioactivity would be trapped as it moved through the soil beyond the point of release and that the extent of migration would be limited by removing the driving force of further liquid releases. As soon as technically and economically practical, ERDA (DOE) plans to discontinue such practices." (Op. cit., pp. 5, 6)

Where are those Hanford liquid wastes now?

Because of the possibility that long-lived transuranics and fission products may be present in the crud at Dresden, as well as long-lived corrosion products; and because chelates in the proposed Nuclear Solvent-1 are known to cause the migration of radionuclides through the environment; and because neither the proposed polymer matrix nor the mild steel drums is capable of serving as a permanent barrier to keep the Dresden wastes segregated from other known and unknown, liquid and solid wastes already present at the Hanford and Beatty sites or apt to arrive in the future; and because Mother Nature -- who is in charge of 500-year rainfalls, the Columbia River and the Amargosa, groundwater and aquifers, the Cascade Mountains, earthquakes and climates -- refuses to be held accountable, I urge the Nuclear Regulatory Commission to withhold its permission for Commonwealth Edison to use chelates to flush its crud out into the human environment.

Sincerely,

Kay Drey

Mrs. Leo Drey (Kay)