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Publishers of  
ONE-SENTENCE ECONOMICS  
AND WORLD LEPROSY  
- Howard W. L'Hommedieu

An end to monopoly — in gov-  
ernment, banking, land, patents,  
mergers, trade unions, medicine.

Rational, humane laws. Prisons  
abolished; replaced by fines,  
with psychiatric treatment if  
necessary.

Assess full ground rent, without  
exception, for ethical revenue  
source, low improvement taxes,  
an end to speculation. Choice of  
sites at true rental value will en-  
sure a surplus of safe employ-  
ment, at wages equal to one's  
production.

Government restitution for offi-  
cial or private injuries. Polygraph  
tests to be accepted as evidence.

CITIZENS' GUIDE:  
THE NATIONAL DEBATE ON THE HANDLING OF  
RADIOACTIVE WASTES FROM NUCLEAR POWER PLANTS  
-NATURAL RESOURCES DEFENSE COUNCIL, INC.

(The Deadly Plaything Of Irresponsible Idiots )

"Important decisions and largely irreversible actions by the Atomic Energy Commission and the nuclear power industry, which to date have not adequately dealt with the problem posed by radioactive wastes, are imminent." As wastes will have to be guarded for half a million years, "a stability of human institutions will be required unparalleled in the history of man," during which time "mountains may rise and fall or ice ages may come and go." 1000 nuclear power plants are expected by the year 2000. "Two broad categories of high-level radioactive wastes result from" the splitting of uranium atoms: the fission products, such as strontium-90 and cesium-137, and the fission by-products, plutonium-239 being of the greatest concern. About one-third of the fuel assemblies are replaced each year. "The spent fuels must then be reprocessed for extraction of the valuable fissionable radionuclides, uranium-235 and plutonium-239 in existing reactors, and isolation of the contaminating wastes. ...The projected release of the noble gas krypton-85 in the U. S. will cause (an estimated) 7,000 cumulative adverse health effects world-wide, two-thirds fatal, by the year 2020." Containers for high-level waste require a 14" thick steel wall and an 11" concrete wall, using an excessive 30 tons of steel a year, by the year 2010.

Strontium-90 and cesium-137 have half-lives of about 30 years. Safe storage, of about 20 half-lives, would require 600 to 1000 years. Plutonium-239 has a half-life of over 24,000 years, requiring storage of 500,000 years. High-level wastes are not separated in the re-processing, and so must all be contained for half a million years. 150 uranium miners are estimated to have died from lung cancer, a number eventually increasing to 600-1,100.

"Generally, radium from western uranium mills and mines enters the Colorado River Basin." Concentration in the San Miguel River was found to be 12% above drinking water standards, while some radium bearing sediments even migrated into the Colorado River, serving L. A.

"...the 90-95 % enriched uranium-235 that is necessary to fabricate the fuel for high-temperature gas reactors is weapons grade material." About 80 are projected to be operating by the year 2000. Plutonium-239 is now being considered as a supplement to uranium in power plants. (Barry Commoner noted that if an infinitesimal percentage of the plutonium to be produced were stolen, it could easily be made into a bomb which could blow up a city. This means numerous army guard units, endangering civilian control of government.)

"Once released into the environment, most radionuclides become concentrated-sometimes many thousandfold-in plants and animals, including some consumed by man." Cesium-137 was concentrated in the flesh of ducks on the AEC Hanford Reservation "to a level of 2,000 times greater than the level in their food." Strontium-90 is concentrated in mothers' milk and bones. Plutonium-239 can become lodged in the human lung; as little as 0.000001 ounce has caused lung cancer in dogs. ALL LEVELS OF RADIATION ARE HAZARDOUS. "It is important to understand that existing standards-even if met-will result in serious injury to health and life in a not insignificant percentage of the population. ...the current radiation protection standard of the AEC would, if the entire population were exposed to the maximum permissible exposure, 'eventually lead to an increase of 5% in the ill-health of the population,' and 'would cause from roughly 3,000 to 15,000 cancer deaths annually.'"

"In terms of their potential for causing serious environmental contamination and human ill-health, the projected quantities of radioactive wastes are staggering. By the year 2000 the high-level wastes alone will have accumulated to a total of about 150 billion curies." 13

billion billion gallons of water (more than one-thirtieth of the world's water) would be required to dilute it to the permissible level for public water bodies. By the same year, 10 million pounds of plutonium-239 will have been produced, the 20,000 kilograms in high-level wastes from which is "enough to cause-if perfectly distributed-7 trillion lung cancers. ...Nuclear proponents...stated that at maximum the amount of high-level radioactive liquid wastes will be something like one one-hundredth of a gallon per family year of electricity generation." Even ignoring all other hazards, the strontium-90 in that fraction of a gallon "is enough to contaminate one billion gallons of water" beyond drinking water standards.

"...recently, the AEC has indicated that engineered surface storage facilities are acceptable for as long as man desires, ...This apparent shift in emphasis may have come about because no permanent storage or disposal means has yet been found." Because of 18 tank leaks and several pipe leaks, at the Hanford Reservation, Washington, about "500,000 gallons of high-level radioactive wastes have seeped into the Hanford soil and permanently contaminated it." The soil will have to be monitored forever. (No reliable cooling has been developed for emergencies, and endless human errors, as well as material failures, much deliberate negligence, for reasons of economy-compounded by considerable drug addiction-and legal suits charging danger to the environment, have resulted in long-period shutdowns for a high percentage of the plants, and forced reductions to half capacity. AEC information cited at Project Independence hearings in Chicago, the week of 9-9-74, was that 27 of the largest nuclear reactors turn out only 54% of their rated capacity. Salesmen promise 80 %, but a study showed a peak of 70 %, after a 3- to 4-year break-in period, then a falling off. Vastly simpler steam boilers have been regulated for 140 years, yet break down. Nuclear power is unthinkable.)

The NAS-NRC Committee: "Since ion-exchanged nuclides of earth materials are subject to reversible equilibria, under leaching conditions that may be superimposed by radically different water introduced into the system, there may easily be induced a removal rate that is much faster than the sorption rate. The future chemical condition of the soil and applied water is not always predictable, as man's requirements from his environment are likely to change in future years of land use..." Past and current practices of the AEC already violate safe procedures for existing conditions in the ground disposal of radioactive wastes.

"The management of high-level radioactive wastes begins upon removal of the spent fuel assemblies from the reactor core, and continues through temporary storage at the nuclear power plant, transportation to a reprocessing facility, separation of uranium and plutonium from the fission products and by-products, temporary storage at the reprocessing facility, transportation to a federally-controlled storage area, interim storage, transportation to a permanent facility, and finally permanent storage or disposal until the radioactivity has decayed to innocuous levels." (Shades of Rube Goldberg. All operations are delicate. Transportation alone means certain accidents and permanent area contamination. We should apply our technical skills not to what is profitable only to the owners of uranium and producers of reactors but to the development of clean, limitless energy, in the public interest.

The Solar Energy Panel lists the following methods of conversion: thermal, photosynthesis, bioconversion, photovoltaics, winds, and ocean temperature differences, with specific estimates of only a few years for the public use of each type-some, in fact, already being in commercial use. Combined with geothermal power-especially a new method of reaching hot rock anywhere in the world-and existing clean power, Jacques Cousteau's statement, that plans have already been worked out which could provide all clean power in ten years, makes our present policies nothing less than criminal. No figures have even been presented to show that more power is produced than is consumed in the total nuclear operation. Taking actually necessary precautions to guard against human and ecological contamination, providing for the cure or care of the sick and deformed, making restitution for all damage done (impossible in matters of health or death), and establishing an army of special guards for all facilities makes it certain that the cost will exceed conceivable benefits. Dr. Ernest Sternglas estimates that nuclear testing and power has killed 500,000 children. The country will be pock-marked with quarantined plants, contaminated and abandoned after 30 years. Government must be compelled to act in accordance with scientific, substantiated advice - and quickly.