shannon
Low level radiation causes damage
to the health of humans and the planet.
AN OVERVIEW
HAZARDS OF LOW LEVEL RADIOACTIVITY
by Sara Shannon, Winter, 1998

Low level radioactivity includes the on-going amount of radiation released from the everyday operation of the world's 433 nuclear power plants, plus leaks and accidents.

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(1) INFERTILITY Radiation causes infertility. The global fertility rate has dropped nearly half since 1955.

(2) WEAKENED IMMUNE SYSTEMS Radiation weakens the immune system. A hundred nation study on quality of health found the United States was number one in 1943. By 1992, the United States was number 100, according to a U.S. Public Health Statistics Report. Globally health is deteriorating with incidence of cancer, heart, allergies and infectious diseases increasing.

(3) MUTATED VIRUS AND BACTERIA Even at low levels radiation may increase mutations of bacteria and virus. Mutations are causing the appearance of new diseases such as Reyes Syndrome, Legionnaire's Disease and Lyme Disease.

(4) LOSS OF OXYGEN GLOBALLY The percentage of oxygen in the air is down to about 19 percent. The expected amount is 21 percent of oxygen. Oxygen is formed by trees and plankton. Trees and plankton are killed by radiation.

(5) OZONE BREAKDOWN Large-scale breakdown of the protective ozone layer in the stratosphere was initiated in 1958 by high atmosphere bomb tests, and continues due to releases from power plants and reprocessing plants. Radioactive Krypton-85 goes to the stratosphere where it greatly enhances CFC ozone damage.

(6) SOLUTIONS Clean, renewable energies: solar, thermal, photovoltaic, wind, biomass, hydro and other renewable technologies.

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(1) INFERTILITY

The global fertility rate has dropped by nearly half since 1955!

The cumulative effects of radiation-caused infertility raise the possibility of gradual human extinction. We may be concerned about the Pentagon backed globalization of trade, but there are more important worries. This trade scenario to sell more goods is built on the quicksand assumption that there will continue to be consumers.

Projected sales and quarterly growth are predicated on one variable that can no longer be counted on -- living consumers.

Escalating infertility in the United States has forced couples to turn to the fast emerging new world of assisted reproduction and pre-made embryos in ever-growing numbers.

A front page New York Times article of November 23, 1997, "Clinics Selling Embryos Made for Adoption" explains "Anguished infertile couples are more than willing to pay for whatever infertility clinics can offer."

Fear of the "population bomb" of the 1960's has turned into the "birth dearth" of the 1990's.

The so-called replacement rate is 2.1 children, which is needed to keep the population from falling. The current fertility rate in the developed nations is 1.6 children per woman. In the less developed countries it is now 3 and falling.

United States rates are below replacement for the last 25 years. From 1950 to 1955 the global fertility rate was 5. Today the total fertility rate is 2.8.

According to a 1996 United Nations report, "World Population prospects: The 1996 Revision," fifty one nations with 44 percent of the world's people are now at, or below the replacement requirements.

Dr. John Gofman, an eminent scientist, medical doctor and eloquent spokesman against the hazards of nuclear power, explained back in the 1970's, in his book Population Control Through Nuclear Pollution, "that the worry about over-population would become a non-worry due to radioactivity."

This is confirmed in the decline in fertility among those born at the time of atmospheric bomb testing (1955-1963) see chart on next page.

Dr. Rosalie Bertell, mathematician, epidemiologist and President of International Institute of Concern for Public Health has been researching infertility for some years and feels it is the "cutting edge" of radiation health damage, surpassing immune damage in the extent of its implications, as it raises the possibility of human extinction.

In response to questions on the status of this research, Dr. Rosalie Bertell writes in a personal correspondence (November 1997): "We found in Kerala, India, that when comparing people matched for socioeconomic status, class, religion, occupation and life style, those living on the high radiation background (300 to 3000 mrad per year) had twice the rate of couples who want children but are unable to have children, than we found for those living on the normal background soil (below 300 mrad per year). This has been released in press statements but it is not published. You will have to take my word for it."

The Baby Boomers are the group born in the USA after the war, the years 1945 through 1963, and these are the years of atmospheric bomb testing as well as the start of the nuclear power industry. They show a high rate of immune related diseases and also an increasing rate of infertility. Data from the U.S. Public Health

Service illustrate the difference between fertility in the Baby Boomers and those who are called Pre-Baby Boomers:

Percent Women Infertile, by Age
U.S. 1965 and 1976

	Percent Infertile in 1965	Percent Infertile in 1976	Percent Change
Baby Boomers			
Age 15-19	0.6	2.0	+1.4
Age 20-24	3.4	5.6	+2.2
Age 25-29	6.1	8.4	+2.3
Pre-Baby Boomers			
Age 30-34	10.8	9.5	-1.3
Age 35-39	13.4	11.4	-2.0
Age 40-44	18.5	14.6	-3.9

(Reproductive Impairments Among Married Couples United States U.S. Public Health Service, Washington, D.C., December 1982)

Two surveys, in 1965 and 1976, show that the percent of infertility of the baby boomers increased, and the percent of infertility of the pre-baby boomers born before bomb testing and nuclear power, decreased.

(2) WEAKENED IMMUNITY

On the correlation between low dose radiation and weakened immunity, radiation physicist, Dr. Ernest Sternglass, states in a 1986 article: "It appears that perhaps the most serious unanticipated effects of fallout is long-term, persistent immune deficiency." And he clarifies, "It can weaken the immune defenses of the body at very low total doses leading to unexpectedly large increases in infectious diseases and cancers." (Int. J. Biosocial Res., July 1986, p. 18)

Initially zealous misrepresentation of the facts led the public to understand that small amounts of radiation were of no special concern. Yet these low levels are exactly the cause of weak immunity and resulting diseases.

Authorities couldn't ignore emerging data and in December 1989, the government sponsored National Academy of Sciences stated in a report titled Biological Effects of Radiation that there was no safe level of radiation.

Low protracted doses of radiation cause physiological damage through the formation of free radicals. A free radical is a molecule with an imbalance in electrons which can destabilize other molecules resulting in cellular damage and disease.

In high, short doses like the Hiroshima bomb blast, radiation primarily causes direct damage to the nucleus of cells where the genes are located that control the functioning of the cell. In contrast, low doses acting continuously over time produce their damage indirectly through the generation of free radicals that destroy cell-membranes, hundreds to thousands of times more efficiently than might be expected in calculations related to high-dose damage. So the everyday amount of radiation that is released as part of the normal operation of the world's 400 nuclear power plants is a very grave concern. Nuclear power plants must have releases in order to function, and these releases, even though they may be partially filtered, allow radiation to go into our air and drinking water, and onto farmland and into our food. The everyday releases of low-level radioactivity by nuclear power plants has been found to cause several kinds of health damage including premature births, congenital defects, infant mortality, mental retardation, heart ailments, arthritis, diabetes, allergies, asthma, cancer, genetic damage and chronic fatigue syndrome. It has been linked to previously unknown infectious diseases, and the resurgence of old ones by damaging the developing white blood cells originating in the bone marrow and thus weakening the immune system.

Dr. Sternglass conjectures what could happen: "With countless thousands of persons having a weaker and weaker immune system as the result of increasing radioactive contamination of the air and food chain, an AIDS mutation-like disease could become a new Black Plague. It's not inconceivable that entire nations could be decimated." (Interview in National Catholic Reporter, October 16, 1997)

(3) MUTATED BACTERIA AND VIRUS

It is well known that radiation can cause mutations in bacteria and viruses. Andrei Sakharov, the famous Russian physicist, described in his 1992 Memoirs that even at low levels radiation could increase mutations of bacteria and viruses. His predictions which were originally made in 1958, have come true and we are seeing new ailments such as Reyes Syndrome which first appeared in 1963, and Legionnaire's Disease which is cased by a bacteria that was not threatening prior to 1976. AIDS may be related to a mutated virus combined with a weakened immunity in a generation born after the first nuclear weapons were detonated.

Of particular interest is Lyme Disease which first appeared in 1975 near the Millstone and Haddam Neck nuclear power plants in Connecticut. Dr. Jay Gould in Deadly Deceit (1990, Four Walls

Eight Windows) describes: "In 1975 there were 59 cases of Lyme Disease recorded; in 1985 the number increased to 863, mainly in the two counties of Middlesex and New London, CT near the Millstone Nuclear Power Plant. Just as increases in cancer may be linked to the huge radiation release from Millstone in 1975, so too may be the tick-borne Lyme Disease epidemic. The Lyme Disease is carried by a spirochete that had not been as harmful to humans prior to 1975. It is well known that radiation can cause mutations in bacteria. The enormous 1975 Millstone radiation release may have caused just such a mutation in the tick-borne spirochete." So we have a double challenge -- the weaker immune system, and the new diseases resulting from mutated pathogens.

Dr. Ernest Sternglass explains:

"When the radiation from such isotopes as strontium-89 and 90 in the bone marrow mutates an existing virus that invades the T-cells of the immune system and kills them in the process of replication, the stage is set for the complete collapse of the immune defenses, and resulting death from opportunistic infections or cancer." ("The Implications of Chernobyl for Human Health", International Journal of Biosocial Research, p. 19, July 1986)

(4) LOSS OF OXYGEN GLOBALLY

Walter Russell, a visionary artist and scientist, predicted in his book Atomic Suicide? published in 1957 that due to man-made radioactivity we would experience a loss of oxygen in the air that we breathe. In a similar way to the predictions of Andrei Sakharov in the 1950's, Walter Russell's foresight is now coming true. Our current oxygen resources are low. The percentage of oxygen in the air is down to about 19 percent. (BioTech News 1997) The expected amount is 21 percent oxygen. Some experts say that we may have originally evolved in an atmosphere of 38 percent oxygen. But now, due to the loss of forests and ocean plankton, our two sources of oxygen production, measurements of oxygen as low as 12 percent and 15 percent have been made in heavily industrialized areas. This oxygen-depleted condition is a contributing cause of the generalized lack of well-being that many are experiencing. And it does not look good for the future. We need oxygen to live!

Trees and green plants provide about half, and plankton provide the other half of our oxygen. Phytoplankton, which are the base of the marine food chain, is declining. Various studies confirm this: plankton in parts of the Antarctic Ocean is declining up to 12 percent. (S. Weiler. Testimony to Senate Commerce Committee,

November 15, 1991)
Trees absorb radioactive carbon-14 in place of stable forms of carbon and in this way they are gradually killed. The book, The Petkau Effect, by Ralph Graeub tells how radioactivity has harmed trees and forests: "It is assumed that the decisive physiological damage resulting in current forest death must have begun during the 1950's. This is depicted in a reduction in density and width of tree rings, and in reduced growth, which is true in the Northern Hemisphere and in the Himalayas.... Neither aging, location, nor climate can be considered as the possible sole cause of damage.... The growth ring of a tree shows exactly what effects the tree has experienced, both in terms of time and seriousness.... During the 1950's and 1960's, there must have been a global wave of air pollution which caused the initial damage." The author speculates that it could not be just the usual chemicals which are so damaging the trees. And he explains that these trees are mainly within the 30th to 60th parallels of northern latitude. "This zone contains the most nuclear power plants -- over 300 -- and almost all nuclear reprocessing centers. Also, the vast majority of nuclear weapons tests occurred in this area."

(5)OZONE BREAKDOWN
The protective layer of ozone around the Earth filters solar and cosmic rays from reaching our planet. Ozone surrounds the Earth in a layer between six and thirty miles above sea level. It is formed when light rays strike molecules of oxygen, which is 02, and cause them to break into two separate oxygen atoms, or 0 and 0. An atom of oxygen then combines with a molecule of oxygen and forms ozone which is 03. It breaks down again and then recombines again. And so on; unless it is interfered with.
August 1954
"It will not take many years to utterly destroy the encircling protective walls which surround this planet and protect the Earth from burning up by the sun's hot rays."
(Walter Russell, Newsletter of the University of Science and Philosophy)
1957
Walter Russell publishes his book Atomic Suicide? whose principle message is that the development of the nuclear weaponry and nuclear industry, if it continues, will eventually destroy the planet's oxygen.
"The element of surprise which could delay the discovery of the great danger, and thus allow more plutonium piles

to come into existence, is the fact that scientists are looking near the ground for fallout dangers. The greatest radioactive dangers are accumulating from eight to twelve miles up in the stratosphere. The upper atmosphere is already charged with death-dealing radioactivity, for which it has not yet sent us the bill. It is slowly coming and we will have to pay for it in another century, even if atomic energy plants ceased today." (Atomic Suicide?, p. 18)

Later in the book he predicts that these effects of radiation would not be noticed "until the late seventies".

1982 and 1984

Two German reports cite that radioactive krypton, which is released in the daily operation of nuclear plants and through the reprocessing of used reactor fuel elements, is affecting the distribution of the electric fields in the atmosphere.

1984

A team of British scientists find an ozone hole over the Antarctic larger than the Continental U.S.

1987

The ozone hole is twice as large as the U.S. It is discovered that ozone is not diminishing just over the south pole but globally.

March 1988

The ozone hole makes headlines.

1987-88

The consensus of opinion says that various man-made chemicals are the sole cause of ozone breakdown; especially compounds of chlorine (CFC's) and bromine (halon fire extinguishers) and a lot of talk about hair spray and refrigerators. A leading authority on the ozone problem, NASA's Dr. Robert Watson admitted many scientists were "baffled" by findings of ozone depletion even in areas where CFC's action was negligible. He called the extent of the hole's growth "absolutely unexpected".

April 6, 1989

"Scientists reported yesterday that for the first time they have detected an increase in ``biologically relevant'' levels of ultraviolet radiation reaching the ground as a result of the ozone hole over the Antarctica. This is the first indication that the depletion of ozone is beginning to cause the potentially harmful effect that has long been predicted." (The Washington Post)

Late 1990

University of California researchers publish their findings that phytoplankton are reproducing less profusely than before. Observing the plankton in the Belingshausen Sea they found that increased UV appears to be suppressing the phytoplankton's productivity by 6 to 12%.

1992
Both NASA and the World Meteorological Society reported 10 to 25 percent ozone depletion measured over the northern United States, Canada, Europe and the Antarctica (ozone hole being three times the size of the United States).
1994
An article in a German journal Strahlentelex (March 3, 1994) explains that the nuclear industry is responsible for the ozone hole. The authors, Giebel and Sternglass explains that radioactive gases like krypton-85 from nuclear plants and from the nuclear fuel recycling plants go up to the stratosphere where they create water droplets from the moisture which in turn form ice crystals on the surface of which the destruction of the ozone by the fluorhydrocarbons is greatly accelerated.
A quote from this article explains:
"The nuclear industry is responsible for the ozone hole. Radioactive gases like Krypton-85 appear in increasing amounts due to the bomb tests, releases and accidents at nuclear reactors and especially from the nuclear fuel recycling plants. Krypton-85 goes up to the stratosphere where it creates ice crystals which catalytically enhance the destruction of ozone by the fluorhydrocarbons."
Note: Krypton-85 has a half-life of 10.7 years and a whole life of 217 years.
"The ozone layer, if it disappears, disappears for all of us." (Isaac Asimov)
1994-95
Hawaii reached its lowest level of ozone on record. The U.S. National Oceanic and Atmospheric Administration announced a 40% increase in dangerous ultraviolet light on the Big Island.
March 1996
The World Meteorological Agency reports "the extremely worrying" development of an unprecedented 45 percent ozone thinning over Greenland, Scandinavia and Western Siberia.
Summer 1997
Research from the Antarctic Marine Living Resources program find "krill abundance in the Antarctic Peninsula region is down 60 to 90 percent since the early 1980's".

(6) SOLUTIONS
The other side of technology can save us. We could shift from polluting energy sources. All that is required is scientific and financial support for the non-polluting energy waiting in the

wings to end our reliance on nuclear energy and oil and coal. Although the price of solar energy has declined over the last few years, how could it be competitive with the enormous monetary support nuclear power has had in the form of subsidies, tax breaks and insurance coverage by the government?

The United States spends nearly $60 billion a year to defend the $30 billion of oil we extract in the Persian Gulf area. This price is too high, especially the human suffering and expenses from thousands of our Gulf War soldiers brutally sick with Gulf War Syndrome are factored in.

Let's use solar panels and electric vehicles to cancel out this dollar extravangaza. Surely $60 billion could help renewable energies get out to the public. Solar, thermal, photovoltaic, wind, biomass, hydro, earth energy and other benign renewable technologies are ready and waiting. Working models exist which could be refined and rapidly spread around the world at affordable cost. Let technology be put to some use that makes sense!

In searching for new energy sources, some inventors have revealed that space is filled with motion -- the quantum fluctuations within the atom and between the stars -- and that this energy could be converted into electricity. Orthodox scientists have overlooked the vacuum of space and that it might be utilized for energy because they have not realized it consists of pure massless charge.

Instead of being blinded by traditional ideas, let us look into the spectrum of energy sources waiting to be harnessed to make usable physical energy.

Once we install clean energies, radioactive waste remains a vast challenge. United States' plans to transport radioactive waste in thousands of shipments across the country to Nevada and to deregulate radioactive waste and use it in commercial products do not make sense! There are other possible solutions. One energy technology that might offer hope is transmutation. Traditional science says this is not possible. However, in recent years, experiments by certain labs have been replicated and several patents granted.

Transmutation is, in this application, used to describe the conversion of radioactive elements into other radioactive elements with shorter life spans, or into non-radioactive elements. In some cases the process may change the radioactive element into another element with a shorter half-life, so that the necessary storage time is reduced. In other cases the element itself would be changed.

If all nuclear power production were stopped and scientists switched over to study the clean-up, and the very available renewable energies were brought into place, we might have a chance

to save the Earth as a habitat for Life.
Of course, we will have to re-mineralize the soil, quadruple plant life for absorbing CO2 and making oxygen, and stop using meat as a protein source because it requires the abuse of so much land and water.
Congress of the United States has served the corporate gang since the mid-1970's, has exploited Nature and humans, impoverished the people who are in a state of biological degeneration, and ruined the land with the huge loss of topsoil, bankrupted the government and allowed the perpetration of radioactive contamination all over the Earth.
If enough people move beyond denial and disinformation, if enough people move beyond rage and resentment, if enough people wake up, unite and take action -- then we can affect changes.
Claim your right to clean water and air and food. Our future is a matter of choice. We each have a role to play.

TECHNOLOGY'S CURSE Diet for the Atomic Age by Sara Shannon, the definitive book on radiation protection, 355 pages with 18 pages of references, is available from www.Earthpulse.com or telephone 888/690-1277.

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