The Chernobyl disaster – 25 years later

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The solution for the global warming/global climate disruption crisis lies not in development of nuclear energy. And the problem is not a technological one; it is one whose roots are political and economic.

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“I feel that at least several hundred scientists trained in the biomedical aspect of atomic energy – myself included – are candidates for Nuremberg-type trials for crimes against humanity for our gross negligence and irresponsibility. Now that we know the hazard of low-dose radiation, the crime is not experimentation – it’s murder.” Dr. John Gofman, former head of the biomedical division of Lawrence Livermore Laboratory and one of those who helped develop the atomic bomb.

In May of 1986, ornithologist Dr. David DeSante was studying bird births at Pt. Reyes, California. He noticed something peculiar: Hatchling numbers of most bird species had plunged by almost two-thirds compared to the previous year. They ruled out as a cause factors such as rainfall change, food availability and pesticide exposure. Shortly before the collapse in hatchling numbers, however, a rain had fallen on Pt. Reyes that contained radioactive particles from the Chernobyl nuclear power plant that had just blown up the previous month. The only possible explanation they could derive was that this radioactivity had gotten into the plants and from there was eaten by the birds. This explanation was strengthened by the fact that birds such as woodpeckers that ate insects that fed on dead wood were not affected. Those that ate insects that fed on live plants were. [1]

Now, on the 25th anniversary of the Chernobyl disaster (April 26, 1986), and while a similar disaster is in the making at the Fukushima Daiichi power plant in Japan, it is useful to review the results of Chernobyl in order to shed further light on the consequences of Fukushima Daiichi and on the entire issue of nuclear power in general.

Socialists and the natural sciences

Most socialists and others active in the workers’ movement aren’t used to studying the natural sciences. However, given the increasing extreme seriousness of the environmental crisis, and given the capitalist class’s proven inability to reverse course, it falls on the workers’ movement to come up with solutions. Therefore, we cannot leave it up to others to understand the basics for us. As Dr. Gofman wrote: “My particular combination of scientific credentials is very handy in the nuclear controversies, but advanced degrees confer no special expertise in either common sense or morality. *That’s why many laymen are better qualified to judge nuclear power than are the so-called*

experts." [2]

Exposure to low level radiation

One of the claims of proponents of nuclear power is that exposure to low-level radioactivity, even for prolonged times, only causes minimal damage. This claim rests on several assumptions. First is the entire way in which dose-"response" (effect on the human cells of a certain level of radiation) is calculated. This is done by assuming that a certain dose – exposure – will lead to a correspondingly lower "response" as the exposure decreases. If a certain dose causes cancer in 50% of those exposed, then one tenth of that level of exposure will cause cancer in 5% of those exposed.

This assumption ignores how different levels of radiation affect the cells. At high levels, the exposure causes DNA damage, which sometimes can be healed by the body's immune system. At lower levels, the exposure causes the creation of free radicals which can attack the cell membrane, causing cell damage.

Multiple causes of illness and death

Proponents of nuclear power ignore the general mortality statistics surrounding the Chernobyl disaster. They assume that deaths caused by certain illnesses, such as pneumonia, cannot be related to exposure to radioactivity. However, this ignores the fact that the severity and ultimate outcome (including death) of almost all illnesses do not have a single cause. The overall health of the person, especially their immune system, must be considered. This is why two people who are exposed to the same infectious agent – a bacteria or a virus – can respond very differently, with one person showing no effects and the other becoming gravely ill or even dying.

Chernobyl and mortality rates

This is why ignoring deaths due to certain illnesses is mistaken at best and an outright cover-up at worst.

In the United States, for instance, the mortality (death) rate in May of 1986 increased by 5.3% vs. May of the previous year. Infant mortality in June of 1986 increased by 12% vs. June of 1985. [3]

Was this related to Chernobyl? Measurement of exposure to radioactivity helps answer this question.

One way to measure this exposure is to measure the amount of radiation in milk, since cows eat grass (especially in the summer) and the grass absorbs radioactive rain, and the radioactive rain would expose almost all people. As Gould and Goldman point out, "*The area with the least rainfall and the lowest radioactive iodine concentration in milk in May of 1986 was the West South Central region consisting of the states of Texas, Arkansas, Louisiana, and Oklahoma), which registered no change in mortality. On the other hand, the Pacific region, mainly California and Washington, had the highest concentration of iodine in milk and registered the greatest increase in deaths." (p. 17) Gould and Goldman conclude that it was the radiation exposure that caused the increased mortality. "These Chernobyl findings were reviewed by Drs. Donald Louria and Marvin Levenhar, of the Department of Preventive Medicine and Community health of the New Jersey Medical School. Despite their initial skepticism, after two months of review they could find no errors in the calculations or plausible alternative explanations. The findings were made public at the first Global Radiation Victims Conference in new York on September 1987, and were ultimately published in… the January 1989 issue of Chemtech (magazine). (p. 21)"*

Similar results were reported in Germany. In Baden-Wurttenberg, infant mortality increased by a massive 68% in May of 1986 vs. May of the previous year. “According to Dr. Scheer (one of the doctors who performed the study), ‘particularly conspicuous were babies that died in the first week of birth, and if you look more in detail you will see there were also conspicuous rises in the infant mortality for those whose conception occurred right in the first week of Chernobyl as well as those in their last month of gestation, which were born in the summer of 1986.’ He also notes small but statistically significant increases in Down’s Syndrome among children conceived during May 1986.” (Gould & Goldman, p. 22)

Gould and Goldman continue, “Radiation levels in Europe were one hundred to one thousand times greater than in the US, but the summertime increase in European infant mortality was only about ten times higher than in the US. This is further evidence for the logarithmic nature of the dose response curve for low-level radiation…”

Other nuclear accidents

Gould and Goldman document similar consequences from the nuclear accident at the Three Mile Island (TMI) nuclear plant in Pennsylvania as well as the accident at Savannah River nuclear weapons facility. In addition, they document similar statistics for the decades during which the US and Soviet regimes were conducting above-ground nuclear bomb tests. In this last period, a whole host of health problems has arisen. These are relevant to the issue of response to low-level radiation exposure, as happened after Chernobyl and as is happening now as a result of Fukushima Daiichi.

Exposure to low level radiation from atom bomb testing: The consequences

From 1915 to the present, both total mortality rates and infant mortality rates declined in the US. However, during the decades of atomic bomb testing (1950s through 70s), these rates of decline slowed down. After the US and the Soviet Union signed the test ban treaty, infant mortality rates resumed the previous rate of decline. There is also some evidence that those conceived during those years have had permanent health effects. For instance, their mortality rates, as measured from 1983-88 when they were young adults, actually increased while all other mortality rates declined [4].

Other significant statistics include ones on effect on brain development. Dr. Irene Silverman published a paper on this issue and summarized her findings at the Sixth International Congress of Radiation Research as follows: “Several measures of brain function, mental ability and scholastic achievement demonstrate that the irradiated children suffered impairment. These findings are consistent with and extend previous findings of suggestive brain damage from radiation.” [5]

These and similar studies show that the releases from Chernobyl and similar accidents, as well as from atom bomb testing, have had wide ranging consequences. Since all nuclear power plants regularly release radioactive gas and water, it is logical to assume that these releases have similar consequences. Since these releases are normal, however, it would be much more difficult to measure their effects, which would be continual.

The “scientific” method

The problem with such issues is that by standard “scientific” procedures, such questions cannot be answered clearly. Usually this is reported with phrases like “there is no clear evidence that…” or “the difference is not statistically significant” which is interpreted to mean “no”. The reason for this is that when judging cause and effect regarding environmental issues, it’s nearly impossible to use laboratory-like procedures. Those in the science world who have links with industries seeking to

cover up their crimes (including the petro-chemical industry and the nuclear industry) use this to their advantage. This is strengthened by the general conservative approach of many scientists.

But there is no doubt that a general cover-up of the environmental effects of low-level nuclear radiation is being carried out, just like a similar cover-up of the effects of petro-chemicals on the environment (such as the BP oil rig disaster, hydro "fracking", etc.)

Gould and Goldman document several cases of such cover ups. The methods include the outright fraudulent reporting of statistics; issuing new rulings that increase the "allowable" dose received after a release exceeds the original dose; and conducting surveys of either too small or too large a population. (If the population sample surveyed is too small, it will be all but impossible to find a "statistically significant" change; if it's too large, then those affected by a radiation release will be mixed in with those who don't receive it, thus masking any affect.)

Global warming/global climate change

Today, some of those who are (legitimately) extremely concerned with the developing crisis of human-caused global warming/global climate disruption support nuclear energy as a part of the solution. These include Dr. James Hansen, sometimes called the "father of global warming science" and British environmental journalist George Monbiot. Among other things, their justification vastly underestimates both the cost of nuclear-produced electricity as well as the amount of greenhouse gas released by nuclear-produced electricity, when the entire process from the mining of the fuel is considered. The main point, however, is the extreme dangers associated with nuclear-produced electricity as summarized to some extent above.

The above points don't even include the dangers from the waste of the nuclear plants. Proponents of nuclear energy claim that in the future, nuclear plants will be able to safely recycle this waste. This is irrelevant when considering the current plants, including those currently under construction. In addition, there is reason to doubt these claims.

Monbiot, in particular, poses the matter as either coal or nuclear. This is a false dichotomy. The same political and economic forces behind the use of coal (and oil) are connected with those supporting nuclear. In the real world of capitalist politics, the actual choice is between fossil and nuclear fuels vs. conservation and renewables. And it is the latter that is the only real solution for global warming/global climate disruption.

The *real* alternative to fossil fuel

Almost four years ago (12/16/07), "Scientific American" magazine presented an issue on the potential use of solar and other sources of renewable energy in the US. They summarized their findings as follows: *"The technology is ready. On the following pages we present a grand plan that could provide 69 percent of the U.S.'s electricity and 35 percent of its total energy (which includes transportation) with solar power by 2050. We project that this energy could be sold to consumers at rates equivalent to today's rates for conventional power sources, about five cents per kilowatt-hour (kWh). If wind, biomass and geothermal sources were also developed, renewable energy could provide 100 percent of the nation's electricity and 90 percent of its energy by 2100."* George Monbiot himself, in his book "Heat" lays out a plan to reduce CO_2 emissions in Britain by 80% within ten years. He excludes the use of nuclear produced power.

All of this is done despite the massive government underfunding of both renewable energy research and of retrofitting present buildings for energy conservation. (Such retrofitting has been repeatedly shown to be the single most cost effective means of reducing greenhouse gas emissions.) Especially considering the fact that it takes about ten years to even build a nuclear power station, there is no legitimate argument for nuclear energy.

The real reasons for the spread of the use of nuclear energy are political and economic. The origins of this technology lie in the US military industrial complex and its development of nuclear weapons. There was massive funding for further development of nuclear energy, including its export to underdeveloped countries. The governments of these countries have several reasons for accepting this technology. Among other things, it gives them access to development of nuclear weapons if these governments choose to develop them.

Political problem

The solution for the global warming/global climate disruption crisis lies not in development of nuclear energy. And the problem is not a technological one; it is one whose roots are political and economic. Too many vested powerful economic interests lie in the way. In addition, the crisis can only be resolved through a clear general plan for production and distribution of goods and services. But this then raises the question of who will devise and administer the plan – which class? If the class that presently controls society –the capitalist class – is in charge, the plan will be totally corrupted by the interests of whoever happens to be the "crony" of those in power. It will be used to further enrich a select few and to further oppress and impoverish the great majority. It will be inefficient and ineffective at best.

Nor can a bureaucratically devised and run plan resolve the crisis. This is what was shown in the old Soviet Union, where a privileged elite rose to the top and dominated and repressed the working class majority. In the process, they looted and plundered society. Due to their repression, this bureaucracy was largely freed from the pressure of the working class. They ended up creating an even worse environmental nightmare than have most capitalist states. The Chernobyl disaster stands in testimony to that fact.

The only class that can resolve the crisis is the class that composes the great majority of human society – the working class. If organized and conscious of their interests and potential power, the working class can take over society, overthrow the capitalist system and introduce a system of democratic socialism. In the past, it was mainly economic and political interests that formed the basis for the justification of socialism. Today the environmental crisis moves to the very top of the list of such justifications. The development of nuclear energy is adding to this steadily mounting environmental crisis.

This is the real lesson of Chernobyl.

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P.S.

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Footnotes

[1] Source: http://eon3emfblog.net/?p=2028

[2] emphasis added - from An Irreverent, Illustrated View of Nuclear Power, 1979, by Dr. John Gofman."

[3] Gould & Goldman, "Deadly Deceit", 1990, p. 15.

[4] Gould & Goldman, p. 103.

[5] Gould & Goldman, p. 153.