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Uranium Weapons, Low-Level Radiation and Deformed Babies

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A dramatic increase in the number of babies born with birth defects was recently reported by doctors working in Falluja, Iraq [1]. One of the proposed causes for this alarming situation is radiation exposure to the population produced by uranium weapons. The international radiation protection community dismisses this explanation as completely unreasonable because (1) the radiation dose to the population of Iraq was too low, and (2) no evidence of birth defects was reported among offspring born to survivors of the atomic bombings of Hiroshima and Nagasaki. This so-called scientific explanation is deeply disturbing, for it is out of touch with the current knowledge base. Abundant evidence exists which clearly demonstrates that birth defects are being induced by levels of radiation in the environment deemed safe by the radiation protection community. In light of this knowledge, uranium contamination cannot be summarily dismissed as a hazard to the unborn.

The destruction of the nuclear reactor at Chernobyl produced a different type of radiation exposure from that portrayed for the atomic bomb. In Japan, victims were exposed to an instantaneous flash of gamma radiation and neutrons delivered from outside their bodies. In contrast, the Chernobyl accident scattered microscopic radioactive particles from the reactor's core throughout Europe which was then inhaled and ingested by the populace. In this situation, those contaminated began receiving ongoing, low-dose exposure internally. According to the current theory of radiation effects embraced by the radiation protection community, there is no qualitative difference in the two types of exposure. What matters is the total amount of energy delivered to the body. Thus, the health effects experienced by the survivors of Hiroshima and Nagasaki can be considered to be representative of the health effects produced from any type of radiation exposure. In the case of birth defects, this assumption has been proven wrong. As a result of the external exposure in Japan, there was no increase in the incidence of birth defects among children whose parents were exposed to the bombings [2]. In contrast, radiation-induced birth defects have been documented in populations receiving low doses of internal contamination. In light of this contradiction, it's obvious that the accepted theory of radiation effects is in error and needs to be corrected. The information which follows will demonstrate the hazard to the unborn produced by radioactive material vented into the environment.

1. In the book *Chernobyl: 20 Years On*, a chapter is devoted to discussing the birth defects in children who, while gestating in the wombs of their mothers, were exposed to radioactivity released by the Chernobyl reactor [3]. The author provides an overview of dozens of studies which confirm that low levels of radiation present in many areas of Europe after Chernobyl were responsible for a wide variety of birth defects. These birth defects occurred where radiation exposure was judged by the radiation protection agencies to be

too low to warrant concern. Fifteen studies were cited which demonstrated an increase in the incidence of a wide variety of congenital malformations. Other studies cited confirmed increases in the rate of stillbirths, infant deaths, spontaneous abortions, and low birthweight babies. An elevated incidence of Down's syndrome was also documented. In addition, an excess of a variety of other health defects were detected which included mental retardation and other mental disorders, diseases of the respiratory and circulatory systems, and asthma.

In a separate chapter of the same book, Alexey Yablokov of the Russian Academy of Sciences provided a review of the extensive body of research conducted after Chernobyl. Regarding studies on birth defects, he cited an increased frequency of a number of congenital malformations which included cleft lip and/or palate ("hare lip"), doubling of the kidneys, polydactyly (extra fingers or toes), anomalies in the development of nervous and blood systems, amelia (limb reduction defects), anencephaly (defective development of the brain), spina bifida (incomplete closure of the spinal column), Down's syndrome, abnormal openings in the esophagus and anus, and multiple malformations occurring simultaneously [4].

2. The wide range of birth defects produced by the Chernobyl accident cannot be accounted for by the data collected from the survivors of Hiroshima and Nagasaki. This is one compelling thread of evidence that something is amiss in the current field of radiation protection. But there is a further problem. The proposed threshold dose of radiation capable of interfering with the development of a fetus, again based on the research from Japan, is between fifty and one hundred times greater than what the radiation protection community insists was the typical exposure in the areas of Europe where the elevated frequency of birth defects was documented. How are we to make sense of these contradictions? Chromosome studies conducted in the contaminated regions provide the answer.

In individuals exposed to ionizing radiation, peripheral lymphocytes, those lymphocytes which circulate in the blood, have an elevated occurrence of certain types of misshapen chromosomes [3,5]. Of particular interest are dicentric chromosomes which are produced when radiation breaks both strands of the DNA double helix in two neighboring chromosomes and the genetic material is then misrepaired. An increase in the relative frequency of these aberrantly shaped structures serve as a biological indicator of radiation exposure which is immune to lies and political propaganda. More specifically, the increased rate of these aberrations is proportional to the dose of radiation received. Thus, their frequency can be used to determine the true level of exposure in contaminated individuals. Studies of this type were conducted in Europe subsequent to the Chernobyl accident [3]. These studies demonstrated that the official dose estimates published by the radiation protection agencies were woefully in error, greatly underestimating the true level of exposure of people throughout Europe. This discrepancy casts further doubt on the scientific integrity of those organizations who are supposedly protecting the world from radioactive pollution. When combining the studies of chromosome aberrations with the studies of birth defects, the science speaks for itself: the population in many areas of Europe received much higher doses from Chernobyl than claimed and birth defects were induced by much smaller doses than suggested by current radiation protection science.

3. As the clouds of fallout from Chernobyl wafted around the planet, governments broadcast reassurances to their anxious citizens that there was no cause for concern, that doses to the public would be too low to produce detrimental health effects. Politically motivated, this

advice was medically ill-conceived. What became evident after the accident was that children who received exposure to Chernobyl fallout, *while still in the wombs of their mothers*, experienced an elevated risk of developing leukemia by the time of their first birthday [6,7]. Relevant to this discussion is the fact that a gene mutation occurring *in utero* is one cause of infant leukemia [8,9].) In countries where unimpeachable data was collected for levels of fallout deposited in the environment, doses to the population, and the incidence of childhood leukemia, an unmistakable, uniform trend emerged: the studied population of children born during the 18-month period following the accident suffered increased rates of leukemia in their first year of life compared to children born prior to the accident or to those born subsequent to the accident after the level of possible maternal contamination had sufficiently diminished. This was confirmed in five separate studies conducted independently of one another: in Greece [9], Germany [10], Scotland [11], the United States [12], and Wales [13]. Again here is evidence that defects are being induced in fetuses that we are told by the radiation protection community are not possible. According to the European Committee on Radiation Risk (ECRR), these results provide unequivocal evidence that the risk model of the International Commission on Radiological Protection (ICRP) for infant leukemia is in error by a factor of between 100-fold and 2000-fold, the latter figure allowing for a continued excess incidence of leukemia as the population of children studied continues to age [6].

4. Other types of chromosome studies have been performed which demonstrate that radiation in the environment is producing damage to DNA that is being passed on to offspring. Minisatellites are identical short segments of DNA that repeat over and over again in a long array along a chromosome. These stretches of DNA do not code for the formation of any protein. What distinguishes these minisatellites is that they acquire spontaneous repeats through mutation at a known rate, which is 1,000 times higher than normal protein-coding genes. Dr. Yuri Dubrova, currently at the University of Leicester, first realized that these stretches of DNA could be used to detect radiation-induced genetic mutations by showing that their known rate of mutation had increased subsequent to exposure. Dubrova and his colleagues studied the rate of minisatellite mutations in families that had lived in the heavily polluted rural areas of the Mogilev district of Belarus after the Chernobyl meltdown [14]. They found the frequency of mutations being passed on by males to their descendants was nearly twice as high in the exposed families compared to the control group families. Among those exposed, the mutation rate was significantly greater in families with a higher parental dose. This finding was consistent with the hypothesis that radiation had induced mutations in the the reproductive germ cells of parents and then transmitted to their offspring. This was the first conclusive proof that radiation produced inheritable mutations in humans.

Minisatellite DNA testing has also been performed on the children of Chernobyl “liquidators” i.e., those people who participated in post-accident cleanup operations. When the offspring of liquidators born after the accident were compared to their siblings born prior to the accident, a sevenfold increase in genetic damage was observed [15,16]. As reported by the ECRR, “for the loci measured, this finding defined an error of between 700-fold and 2,000-fold in the ICRP model for heritable genetic damage” [6]. The ECRR made this further observation: “It is remarkable that studies of the children of those exposed to external radiation at Hiroshima show little or no such effect, **suggesting a fundamental difference in mechanism between the exposures** [17]. The most likely difference is that it was the internal exposure to the Chernobyl liquidators that caused the effects”.

5. In November 2009, Joseph Mangano of the Radiation and Public Health Project published a study of newborn hypothyroidism near the Indian Point nuclear reactors in Buchanan, New York [13]. Hypothyroidism is a disease characterized by an insufficient production of the hormone thyroxine. One cause of the disease is exposure to radioactive iodine which selectively destroys cells in the thyroid gland. Currently, the only environmental source of radioactive iodine is emissions from nuclear power plants. According to Mangano, four counties in New York state flank Indian Point and nearly all the residents of these counties live within 20 miles of the reactor complex. During the period 1997 to 2007, the rate of newborn hypothyroidism in the combined four-county population was 92.4% greater, or nearly double, the U.S. rate. The rate in each of the four counties separately was above the U.S. rate, and in two of the counties, the rate was more than double the national rate. In the period 2005-2007, the four county rate was 151.4% above the national rate. These finding were consistent with the fact that the local rate of thyroid cancer is 66% greater than the U.S. rate [14].

Mangano's study raises important questions regarding our common welfare. We live with assurances by government and industry that nuclear reactors are operating within guidelines sponsored by the radiation protection agencies. What radiation they emit are dismissed as too low to warrant concern. An yet, babies born to mothers living in proximity to Indian Point are suffering an increased rate of hypothyroidism. Either the reactor complex is emitting more radiation than publicly known, or once again, there is an error in the safety standards published by the radiation protection community.

6. Are weapons containing depleted uranium a cause for concern for producing birth defects? Given that uranium inside the human body targets the reproductive system, the elevated rate of birth defects in Iraq strongly suggests that DU exposure is involved. In experimental animals exposed to uranium compounds, uranium has been found to accumulate in the testes [20]. Among Gulf War veterans wounded by DU shrapnel, elevated levels of uranium have been found in their semen [21]. In light of this discovery, the Royal Society cautions that this raises "the possibility of adverse effects on the sperm from either the alpha-particles emanating from DU, chemical effects of uranium on the genetic material or the chemical toxicity of uranium [21]." In experiments on female rats, uranium was found to cross the placenta and become concentrated in the tissues of the fetus [20,21,22]. When DU pellets were implanted into pregnant female rats, a direct relation was observed between the amount of contamination in the mother and the amount of contamination in the placenta and the fetus [23,24]. Most importantly, once dissolved within the body, uranium's primary chemical form is the uranyl ion UO2++. **This form of uranium has an affinity for DNA and binds strongly to it** [25]. This fact alone is should be sufficient to halt the scattering of DU aerosols amidst populations. Internalized uranium targets human genetic material! Needless to say, this fact is totally ignored by the International Commission on Radiological Protection and related organizations when determining safe levels of exposure to uranium and assessing the risk posed by uranium for inducing birth defects.

7. In infants, hydrocephalus is a condition characterized by increased head size and atrophy of the brain. The frequency of this birth defect has increased dramatically in Iraq since the first Gulf War [26]. A small and admittedly incomplete study conducted in the United States lends credence to the hypothesis that DU exposure is the causative agent [26]. Rural and sparsely populated Socorro County is located downwind of a DU-weapons testing site, the Terminal Effects Research and Analysis division of the New Mexico Institute of Mining and

Technology. On average, 250 births occur yearly in the county. An investigation by a community activist revealed that between 1984 and 1986, five infants were born with hydrocephalus. (The normal rate of hydrocephalus is one case in every 500 live births). According to the demonstrably incomplete State of New Mexico's passive birth defects registry, between 1984 and 1988, 19 infants were born statewide with the condition, three of these within Socorro county. Regardless of which accounting is correct, the results are disturbing given that Socorro contains less than 1% of the state's population.

8. To conclude, the current dogma regarding radiation effects cannot account for the increase in genetic malformations in populations exposed internally to low levels of radiation. Something is deeply wrong with the current science of radiation safety. Given this, statements by the radiation protection community regarding the impossibility that low levels of uranium can cause birth defects are suspect. Numerous studies demonstrate that uranium produces a wide range of birth defects in experimental animals [20,26]. Further, numerous *in vitro* and *in vivo* studies conducted in the last twenty years have proven that uranium is genotoxic (capable of damaging DNA), cytotoxic (poisonous to cells), and mutagenic (capable of inducing mutations) [27]. These effects are produced either by uranium's radioactivity or its chemistry or a synergistic interaction between the two. These findings lend plausibility to the idea that the observed increased incidence of deformed babies in Iraq is related to depleted uranium munitions [26].

Paul Zimmerman is the author of *A Primer in the Art of Deception: The Cult of Nuclearists, Uranium Weapons and Fraudulent Science*. A more technical, fully referenced presentation of the ideas presented in this article can be found within its pages. Excerpts, free to download, are available at www.du-deceptions.com.

Notes

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