

Excerpts from *A Primer in the Art of Deception*
Chapter Six: The Most Heinous Crime in History:
The Betrayal of Mankind by the Radiation Protection Agencies
(www.du-deceptions.com and www.nonuclear.se/zimmerman200908deception)

By Paul Zimmerman, 8 February 2011

The field of radiation protection has been heavily infiltrated and compromised by those with a vested interest in ensuring the proliferation of nuclear and radiological weapons and commercial nuclear reactors. A politically motivated international system of standard setting agencies, upholding antiquated models of the biological effects of ionizing radiation, has asserted itself as the voice of authority in the field of radiation protection. Governments, in turn, depend on the flaws within these models to legitimize the safety of their nuclear programs and conceal the detrimental biological effects these programs impart to unsuspecting populations.

At issue is the health effects of low levels of internal emitters, radionuclides absorbed from nuclear pollution in the environment which undergo radioactive decay while sequestered within the human body's interior.

Why is an outdated and inaccurate model of radiation effects promulgated?

The traditional concept of dosage, when misapplied to low levels of radiation, is a perfect instrument of camouflage. It is relied upon because it so successfully disguises underlying biological effects. The successful model for calculating dosage and dose effects for high doses of external photon irradiation, by sleight of hand, is overlaid on a dimension of reality for which it doesn't apply. The science that supports the nuclear establishment forces this fit. It is the basis for the unfounded assumption, rigorously defended, that low-dose effects can be accurately extrapolated from verifiable high-dose effects. This abuse of the concept of dosage is one of the cornerstones of the conspiracy to hide the health effects of nuclear pollution. It is an intentional misrepresentation of the phenomenon, upheld by the radiation protection community, to confuse people and distract intellectual inquiry into the safety of exposure to low levels of internal emitters.

Is this another conspiracy theory?

No! It is the expression of up-to-date science. The international radiation protection agencies have left within the public domain a penetrable artifact of their true intentions and their true allegiances, i.e., their system of evaluating the risks of radiation exposure and their standards of what constitutes a "permissible" dose of radiation. The scientific fraud perpetrated by the radiation protection community is unmistakably written within the system currently relied upon to evaluate the hazards of internal contamination. Through a study of this system, glaring flaws become evident, intentionally left uncorrected to serve the political agenda of covering up the true impact to health from radiation released into the environment.

Why is this issue so important?

The release of radioactive material into the environment is an inescapable byproduct of many aspects of nuclear technology. Human beings receive internal contamination from uranium mining, the routine and accidental releases from nuclear power plants and weapon production facilities, the seepage of radioactive waste into the environment, fallout from nuclear weapons testing and the recent deployment of uranium/depleted uranium weapons. The standards of safety underlying all of these activities have been developed by the radiation protection agencies. If their models underestimate the health consequences of internal contamination of the human body, more people are suffering from radiogenic diseases than currently acknowledged.

Exhibit A

The entire system that has evolved to safeguard the welfare of humanity is ultimately grounded on one fundamental idea: The essential feature of the interaction of radiation with biological systems is the transfer of energy from its source to the medium in which it is absorbed, and the degree of injury is proportional to the amount of energy transferred. When now queried by current understanding, biology responds that this central idea is erroneous. **The neat concept of energy transfer is largely irrelevant to the biological response to ionizing radiation.**

“The amount of kinetic energy transferred in each collision [between a charged particle and the molecular components of a cell] plays no role in the production of radiation effects in mammalian cells”. From *Radiation Protection Dosimetry: A Radical Reappraisal* (Simmons and Watt).

The biological effects of ionizing radiation cannot be adequately modeled by simply dividing the quantity of energy by the mass into which it is deposited. That mode of thinking blinds one to the reality of how biological damage is actually induced by radiation. A living system is made up of cells. Impact on the functioning of these cells depends on how the energy is distributed in relationship to critical cellular structures.

“One need only consider the common fever in order to ponder the very high probability that the biological potency of ionizing radiation is related to its spatial concentration along tracks, rather than to its meager addition of energy to cells. A dose of 400 cGy (400 rads) is equivalent in heat to only 4.184×10^{-3} joules per gram of tissue — enough to provoke a mini-fever of 0.001 degree Centigrade — yet 400 cGy of ionizing radiation to the whole body, acutely delivered, will kill about half the humans exposed to it.” From *Radiation-Induced Cancer from Low-Dose Exposure: An Independent Analysis* (Gofman).

“Energy, however, can be transferred in a multitude of ways, and takes many forms; on its own, energy transfer is a totally useless measure of quality of effect. For example, one cup of boiling water at 100 degrees centigrade contains the same energy, the same number of Joules, as some ten times this quantity of water at the temperature of ten degrees. An energy transfer to a person of one waterthrow unit could encompass either a cupful of boiling water in the face or a bucket of cold water: more information is needed before the health consequences can be assessed.” From *Wings of Death* (Busby).

The model for external radiation that came to dominate thinking does in fact approximate reality to a certain degree. This is not because the essence of the phenomenon is, as visualized in the model, a transfer of energy throughout the target mass, but because at relatively high doses individual cells begin receiving multiple hits in critical structures and become increasingly vulnerable to functional alteration. A dense pattern of ionization in proximity to critical cellular structures is created which mirrors that created by alpha particles, and to a lesser degree beta particles, released by internal emitters. The key phenomenon is the location of ionizing events within the cell, not simply the amount of energy transferred. At high doses of external radiation, the differences between irradiation from the outside and internal exposure becomes blurred. Dense patterns of ionization within individual cells are created by both types of exposure. Biological damage becomes proportional to the dosage and the quantity of energy is predictive of the damage. Thus, the apparent triumph of the physics-based model.

The fundamental problem with the model is that it breaks down at low doses of radiation.

When the dosage delivered by photons external to the body is so low that each cell fails to be hit at least once, the idea of uniform distribution of energy within the target mass falters. At these low doses, the pattern of ionization created by external radiation and the hazard this poses cannot be likened to that produced by decaying radionuclides which are creating dense patterns of ionization and extensive local chemical disruption in individual cells. At low doses, the equivalent energy delivered by x-rays or gamma rays externally and that delivered by alpha and beta particles internally produce different patterns of chemical disruption to individual cells. As a consequence,

low dose effects from external irradiation cannot be used to predict effects from internal contamination. The simple conclusion that, dose for dose, internal emitters may produce more negative biological effect than external irradiation is a calamitous conclusion for the nuclear establishment and will ignite vehement rebuttal. The whole basis for discounting the hazards from radionuclides emitted from nuclear installations or the detrimental effects of depleted uranium weapons is grounded on the purported equivalency between external and internal radiation based on the amount of energy they deliver. The qualitative difference in their capacity for promoting harmful effects to individual cells is conveniently ignored.

Exhibit B

Here's a simple but effective illustration that pinpoints the inadequacy of current practices for calculating the biological impact of internal emitters:

“The conventional approach of averaging the energy transfer from radioactive decay events across a whole organ or the entire body is like emptying a Colt 45 into a football stadium and averaging the effects of the 6 bullets across all the 25,000 spectators. The assumption that between them 25,000 people should be able to stop six bullets without any of them feeling more than a tap on the arm will not console the six grieving families.” (www.llrc.org)

In this example, the 25,000 spectators are the cells of an organ. The six bullets are six alpha particles. By the averaging model, the energy from the velocity of the bullets is treated as equally distributed to all who feel no more than a tap as a result. But this model simply does not reflect the phenomenon. In reality, the full energy is absorbed by only six spectators with catastrophic consequences. In terms of biological effect, it makes no sense to speak of the impact of six alpha particles distributed over 25,000 cells. Only the individual cells hit will suffer biological damage (More later on genetic instability and the bystander effect.) The remainder will escape unscathed. The dose is not received by the whole organ. It is absorbed completely by only a handful of cells.

Here's an example by Chris Busby of a particle of uranium dioxide with a diameter of 2 microns lodged in the lymphatic system. The dose to the cells in the immediate vicinity of the particle is 150 rem (1500 mSv) per year. By comparison, Busby provides a calculation of how the ICRP would calculate the dose **averaged over the whole lymphatic system** which is considered to be a mass of 800 grams. By this method of calculation, the yearly dose to the lymphatic system is only a meager 0.0000021 rem (2.1×10^{-7} mSv).

Pause right here. Observe the crafty sleight of hand that is taking place as a card gets sloughed under the table. The International Commission on Radiation Protection is mesmerizing the world into believing the decay of depleted uranium atoms within the body is insignificant. By a system of smoke and mirrors, they take the energy transmitted by a few alpha particles to a small volume of cells and treat it **as if** this energy is distributed through 800 grams of tissue. Totally false to the reality of the situation, their system DILUTES the impact by suggesting that it is spread over a large volume. In calculating dosage by this manner, the biological effects of imbedded uranium particles is made to appear inconsequential. When the phenomenon is viewed in its true light, the dosage is distributed to local clusters of cells disturbed by the marauding alpha particles. A whopping dose of radiation is deposited in a small volume creating significant chemical alterations in the affected cells and setting the stage for mutations and the possible induction of a cancer, or occurring in developing embryos, birth defects.

Quite obviously, the currently accepted model “cannot deal with small volumes and inhomogeneities of dose, and for this reason is unsafe to apply to internal radiation” (European Committee on Radiation Risk).

Exhibit C

The studies upon which the risks to health from low doses of internalized alpha and beta emitters are based are primarily studies of *acute doses of external irradiation by x-rays and gamma rays delivered at a high dose rate!* Justification for the validity of this extrapolation is based on the fallacious model of energy transfer and the averaging of dosages over large volumes of tissue. Mankind's safety from internalized radioactivity is based on the erroneous assumption that there is no physiological difference in how energy is delivered to the body. External irradiation and particulate emission from internalized radionuclides are regarded as being identical phenomena in terms of the physiological effects they induce.

The assumption made so long ago that external and internal radiation produce the same biological effects has never been validated. Extrapolating from known effects of external irradiation to predict suspected effects from internal emitters is scientifically without merit:

“With regard to internal radiation doses, the committee [ECRR] identifies a serious misuse of scientific method in the extension and application of the ICRP external model. Such a process involves deductive reasoning. It falsely uses data from one set of conditions — high-level, acute, external exposure — to model low-level, chronic, internal exposure. The procedure is scientifically bankrupt, and were it not for political consideration, would have been rejected long ago” (European Committee on Radiation Risk).

Of the handful of studies of high-level external exposure used to derive the risks from low levels of internal exposure, the most important is the Life Span Study of the survivors of the bombings in Japan during WWII. This is incomprehensible, because this study is deeply flawed. (A full discussion of this topic can be found in the PDF version of Chapter Six, available at www.du-deceptions.com or www.nonuclear.se/zimmerman200908deception.)

Exhibit D

The model used today by international agencies formulating safety for internal contamination by radionuclides is essentially the same model, with updated modifications, developed during the Manhattan Project, the Tri-Partite Conferences, and the meetings of the committees on internal emitters of the NCRP and the ICRP. **This model was developed prior to the discovery of DNA!** Since the 1950s, a revolution has taken place in biology. Entire vistas of cellular and molecular biology, totally unsuspected by World War II physicists, have opened up for scientific exploration. The rapid advancement in technology has created powerful tools for imaging cellular structures and probing the mysteries of the molecular chemistry that orchestrates cellular processes. Advances have been so profound that, today, microbeams can deliver individual alpha particles to cells *in vitro* and the altered morphology of cellular structures can be determined by DNA sequencing and correlated with functional aberrations. Over this amazing new world of microscopic wonders and the deepening understanding of the cellular and molecular basis of life, the ICRP, NCRP, NRPB, UNSCEAR, and BEIR, like Fascist dictators, inflexibly demand that their archaic model of radiation effects be the basis for radiation protection. They tyrannize all discussions on the biological effects of ionizing radiation, and are rigidly intolerant of allowing other points of view from gaining a footing. Despite the fact that cellular response to radiation can now be studied as never before, these “august” bodies of self-declared experts insist that radiation effects can only be properly modeled as they were modeled in the early 1950s. This state of affairs is despotic. The ruling paradigm on radiation effects maintains its supremacy by ignoring a half-century of research in the biological sciences.

Phenomena ignored by current radiation protection science:

1. Genomic Instability

2. The Bystander Effect
3. Varying sensitivity of cells to radiation during their lifetime
4. The Second Event Theory
5. The biphasic dose response demonstrated in low-dose/slow-dose rate exposure
6. Genetic variation between people in sensitivity to radiation damage
7. Differences in immune response to radiation damage
8. Different radioisotopes have different chemical affinity to different molecular structures and their subsequent radioactive decay can produce an elevated hazard. Examples: uranyl ions bind strongly to DNA and strontium has an affinity for the phosphate backbone of DNA.

Exhibit E

In Exhibits A through D, we have examined glaring shortcomings in the current approach to radiation safety as it applies to low doses of internal emitters. We have pinpointed major flaws in the reigning paradigm of how radiation interacts with living cellular structure, the way dosage is calculated, the research used to justify and perpetuate these errors, and the biological effects that the current system cannot adequately address. With this groundwork prepared, we can carry a torch into the heart of darkness of the nuclear age. Egregious malfeasance crouches silently within the answer to a single question: *Why do radiation protection agencies continue to uphold an antiquated model of how internal emitters interact with living systems when assessing the hazards to health of ionizing radiation?*

The computational system developed for computing dosages from internal emitters contained within it all the makings for an instrument of deception. While struggling to portray each radiation release in the most benign light by repeatedly running numbers through their equations until they produced the desired results, the propagandists chanced upon the discovery that the computational system could be re-engineered into a political device for masking the medical significance of radioactivity delivered into the human body in low doses from internal emitters. By this conversion, the dosages delivered to exposed populations and the medical implications of these dosages could forever be manipulated so as to give the appearance of being of no consequence. Servants of the nuclear agenda realized they were heirs to a masterful propaganda tool. In their hands, the accepted methodology for calculating dosages from internal emitters, and thus how the public perceived the hazards thrust upon them, could be mathematically manipulated so as to trivialize the quite real threats to health. By computational abracadabra, all dosages to vulnerable populations downwind of liberated plumes of radioactivity could be made to appear within the permissible limits upheld by the international radiation protection community. What started out in Subcommittee Two as an effort to protect people from radiation was transformed into a vehicle of fraud for masking the potential health consequences of government-sponsored nuclear programs.

Contained within each new deck of cards are two jokers. In many types of card games, the rules allow for these jokers to take on changing identities for the benefit of those who hold them. In the game of radiation protection, these two jokers are *DOSE* and *RISK*. These are extremely slippery characters, chameleons, continually metamorphosing to lend the appearance to any radiation release that nothing hazardous to human health has transpired. When a radiation release occurs, the two most important pieces of information members of the public who might have been exposed want to know is their level of exposure (dose) and the risk this dose poses to their health. Clever manipulation of these two key pieces of information can transform any radiation insult, no matter how extreme, into a seemingly benign event.

Section Headings in Exhibit E:

SCAM NUMBER ONE: According to the equation, $\text{dose} = \text{energy}/\text{mass}$, a dose of radiation can be reduced (and made to appear within the guidelines of safety) by increasing the mass that absorbs it.

SCAM NUMBER TWO: Rigidly adhere to the traditional concept of dose when evaluating the biological effects of radiation, even in instances where that concept of dose is rendered meaningless.

SCAM NUMBER THREE: Continue to calculate organ doses from internal emitters by averaging the emitted energy over the entire mass of the organ.

SCAM NUMBER FOUR: To ensure that the radiation protection community develops standards of safety acceptable to the nuclear establishment, make sure important staff appointments are filled by scientists sympathetic to the nuclear agenda.

SCAM NUMBER FIVE: In the aftermath of a radiation release into the environment, the perception of hazard to the exposed population can be managed by controlling information of the quantity of radiation involved, and thus, the dosages.

SCAM NUMBER SIX: Beguile the public with inappropriate comparisons between external irradiation and internal contamination.

SCAM NUMBER SEVEN: Following a radiation release, avoid conducting adequate radiation monitoring.

SCAM NUMBER EIGHT: In instances where environmental monitoring is undertaken, avoid measuring the full spectrum of radiation emitted from the radioisotopes involved.

SCAM NUMBER NINE: Let the fox guard the henhouse; leave radiation monitoring and dose reconstruction in the hands of those who have a vested interest in minimizing the perception of hazard.

SCAM NUMBER TEN: Focus attention on dosage as the prime determiner of biological effect so as to divert thought from pioneering an appreciation of the biochemical chaos induced by the transmutation of atoms during radioactive decay.

SCAM NUMBER ELEVEN: Rely on the concept of “dose” to mislead the layman about the biological impact of low levels of radiation.

SCAM NUMBER TWELVE: Mislead the public into believing that science has definitively established that low doses of radiation present no risk to health.

SCAM NUMBER THIRTEEN: Promote simplistic, all-encompassing hypotheses of the relationship between dosage and physiological response to spellbind the public into believing that more is known about the effect of low doses of radiation than is actually the case.

SCAM NUMBER FOURTEEN: Deviously initiate a propaganda campaign to overturn conventional wisdom on dose-response relationships in order to achieve a political objective.

SCAM NUMBER FIFTEEN: Rely on your models to create reality.

SCAM NUMBER SIXTEEN: Conduct spurious diagnostic tests on possible victims of internal contamination and then use the inevitable negative test results to falsely reassure the patients that their dose was nonexistent or inconsequential.

SCAM NUMBER SEVENTEEN: Disembowel the profession of health physics to such an extent that its members will turn a blind eye to the misdeeds of Government.

SCAM NUMBER EIGHTEEN: Base estimates of health risks from chronic exposure to internal emitters upon instances of acute flashes of external exposure.

SCAM NUMBER NINETEEN: Mislead the world into believing that, below the dosages where deterministic effects begin to occur, the only health concern from radiation exposure is the risk of cancer.

SCAM NUMBER TWENTY: Entrust agencies of questionable objectivity with the power to establish the risk factors for low-level radiation exposure.

SCAM NUMBER TWENTY-ONE: Alter population statistics to completely corrupt accurate risk assessments

SCAM NUMBER TWENTY-TWO: Derive estimates of the risk to health from chronic internal contamination from research conducted on instances of acute external irradiation.

SCAM NUMBER TWENTY-THREE: Derive the risks to health from exposure to ionizing radiation from corrupted epidemiological data.

SCAM NUMBER TWENTY-FOUR: Cloak biased judgment in the guise of objectivity when selecting the data used to assess radiation risk.

SCAM NUMBER TWENTY-FIVE: Deny that low doses of radiation pose a risk to health by ignoring studies that provide clear evidence that such a risk exists.

SCAM NUMBER TWENTY-SIX: Underestimate the risk of damage to cells from low-level radiation by making the false comparison between normal free radical damage and damage caused by ionizing radiation.

SCAM NUMBER TWENTY-SEVEN: Underestimate the risks posed by low-level radiation by failing to take into account known physical and biological phenomena.

SCAM NUMBER TWENTY-EIGHT: When establishing risks to health from ionizing radiation, ignore scientifically validated low-dose effects that inconveniently intrude on the reigning scientific paradigm.

SCAM NUMBER TWENTY-NINE: Base estimates of risk to a population from exposure to radiation on the response of the average adult while ignoring the heightened sensitivity of subgroups within the population.

SCAM NUMBER THIRTY: Use current theories of cancer etiology as a multistage process to deny that exposure to low doses of radiation is hazardous.

SCAM NUMBER THIRTY-ONE: When assessing the health risks of particular radioisotopes, make invalid comparisons between the health effect of the isotope as it is found in nature with the health effect of the technologically enhanced form of the isotope.

SCAM NUMBER THIRTY-TWO: When all else fails, simply lie.

SCAM NUMBER THIRTY-THREE: Cloud thinking on the biological effects of human-generated low-level radiation with the claim that populations living in areas of high natural background radiation are no more at risk from radiation-induced injury than people living in areas of low natural background radiation.

SCAM NUMBER THIRTY-FOUR: Compromise your position as a respected scientific organization and voice of authority to advance a veiled political agenda and skew the debate over the risks to health of low-dose exposure.

SCAM NUMBER THIRTY-FIVE: When promoting the benefits of nuclear technology to the layman, rely on half-truths and incomplete information to disguise costs to the environment which ultimately become risks to health.

SCAM NUMBER THIRTY-SIX: Violate people's innate process of evaluating and assuming risk in their daily lives by imposing highly risky technology upon them and then falsely underrate the risks that accompany that technology.

SCAM NUMBER THIRTY-SEVEN: Block the dissemination of all information that raises questions as to the validity of the current estimates of risk from internal contamination by radionuclides.

SCAM NUMBER THIRTY-EIGHT: Design epidemiological studies in such a way as to guarantee that the results will underestimate the risk to health from radiation in the environment.

SCAM NUMBER THIRTY-NINE: Use the risk factors to structure the perception of the health consequences of a radiation release.

Exhibit F

The information to be presented here will bear witness that the radiation protection community has allowed some monumental flaw to persist in current approaches to radiation safety, either through perpetuating defective models or a basic misunderstanding of radiation effects, ineffectual oversight as to the true extent of population exposure, insufficient epidemiological investigation or intentional malfeasance. When it is proven that levels of radiation in the environment deemed "permissible" are ruining human health, the science of radiation protection as currently practiced will stand exposed as counterfeit and duplicitous.

Numerous scientific studies are discussed in detail in this section demonstrating low-dose health effects and the inadequacies of the current risk factors which are relied upon to predict health outcomes from population exposure to internal emitters. They can be broadly summarized as follows:

1. Infant leukemia after the Chernobyl accident
2. Childhood leukemia in the vicinity of the Sellafield reprocessing facility in the UK
3. Childhood leukemia in proximity to a number of nuclear installations throughout Europe
4. *In utero* effects produced by Chernobyl
5. Elevated rates of minisatellite DNA mutations among groups exposed to Chernobyl fallout
6. An epidemic of excess cancers after Chernobyl
7. Excess rates of cancer produced from the fallout of nuclear weapon testing
8. Elevated cancer rates among nuclear workers
9. Elevated rates of childhood cancer downwind of nuclear power plants in the U.S.
10. Elevated rates of breast cancer downwind of nuclear power plants in the U.S.

Summation

"We have radiation with us, we've always had some radiation with us, and it's an added risk. The people deserve to know what the risk is, and they should make the decision on how much radiation they want to take or are willing to take, and there shouldn't be any cover-ups. There shouldn't be any withholding of information. The people themselves should decide on their own future and the future of their families." A quote from Karl Morgan reproduced from *Fallout: An American Nuclear Tragedy* (Fradkin).