

U.S. PERSPECTIVES ON WEAKENING OF INTERNATIONAL RADIATION
STANDARDS in DRAFT ICRP-2005

First in a Series by NIRS on Radiation Standards

The International Commission on Radiological Protection (ICRP), a private agency comprised of nuclear advocates, is updating its recommendations for allowable exposures to ionizing radiation. ICRP's "recommendations" routinely form the basis of federal and international regulations. The draft ICRP 2005 is available for public comment on its website: www.icrp.org/icrp_rec_june.asp. Let's tell ICRP, before the December 31, 2004 deadline, what we, who receive the doses, think!

Deregulating and Not Regulating Nuclear Materials and Practices: the old "BRC"

ICRP-2005 recommends NO regulatory control over anything radioactive that gives a low dose or has a low concentration. Both manmade and natural radioactive materials and wastes can be "excluded" from the whole regulatory system if they can be calculated or measured to be less than the ICRP-2005 recommended levels. They can also be "exempted" meaning they are included in the system, subject to regulatory authority, but not regulated. ICRP 2005 refers to the exemption levels developed by Euratom and others. These are the same exempt levels NIRS and 4 other groups are suing DOT and NRC to reject in US transport regulations.

ICRP-2005 retrogresses to the long-discredited concept of a "safe threshold" and adopts a level of one millirem (mrem, 10 microSieverts uSv or 0.01 milliSieverts mSv) per year. ICRP concludes that below 1 mrem/yr (10 uSv/yr), or below specified concentrations (ranging from 0.01 to 10 becquerels per gram; 0.27 to 270 picoCuries per gram), there should be no regulatory control or constraint. Supposedly low levels of exposure and difficulties for the industry to keep control justify exclusion from the regulatory system, as if not radioactive. This "exclusion" under ICRP's recommendations is contrary to the U.S. National Research Council 1990 BEIR-V Report conclusion that regulators should recognize the linear no-threshold relationship of dose to response all the way down to zero dose.

ICRP recommends allowing radioactive materials estimated to give doses above one mrem (10 uSv) annually to be "exempted" from regulations and subject to less than full regulation. This would give a green light to the use of radioactive materials in consumer products. ICRP provides no estimate or limit on the number of exclusions and exemptions. There is no verification or enforcement.

This violates repeated public opposition to deregulating nuclear materials and wastes despite ICRP's claims of intending to involve "stakeholders." ICRP perpetuates the incorrect assumption that we will accept "trivial" risks from release of previously regulated manmade nuclear material. **We call on ICRP to require that all man-made ("artificial") radioactivity be regulated at all levels...not "excluded" or "exempted" from controls.**

Ignoring Radiation Studies Indicating Increased Risks from Low Doses

ICRP ignores studies on radiation damage such as the Bystander Effect (cells in the area but not directly hit by radiation show injury) and Genomic Instability, claiming that they don't know enough to reflect its risk estimates. The CERRIE Committee and its Dissenters charge that ICRP's risk levels underestimate risks by 10 to several hundred fold. (More in future Monitor on these.) **We call on ICRP to incorporate increased risks identified by other scientists and panels in its radiation risk estimates and to adopt the precautionary principle of preventing potentially harmful exposures.**

Underestimating Alpha Internal Risks and other risks

In updating exposure standards, ICRP chose to retain a relative biological effectiveness or quality factor (RBE) of only 20 for alpha particles despite estimates by some researchers that they do hundreds of times more biological damage than gamma and X-rays. **We call on ICRP to incorporate the increased risks from alpha particles and other internal emitters.**

Reduce Worker Exposure

Although the US (which allows workers 5 rems or 50 mSv/year) has not even adopted ICRP 60 (1990)'s more protective worker exposure limits (2 rems or 20 mSv per year), **we join the European safe energy advocates and UK National Radiological Protection Board in their calls for even more protective worker dose limits.**

Replace "Standard Man" with the Protection of the Most Vulnerable

ICRP claims that its primary aim is to provide "appropriate radiation protection" for Reference Man ("Standard Man") "without unduly limiting the beneficial actions giving rise to radiation exposure." This amounts to inadequate protection for most of us, and only then if it does not interfere with nuclear industry profit.

Environmental and Non-Human Species

The ICRP has formed a new committee (#5) regarding radiological protection of non-human species. It is deriving a set of "Reference Animals and Plants" (e.g., worms, bees, rats, ducks, crabs, salmonid and flat fish, brown seaweed, pine tress, and grasses). These will be inadequate like "standard man" has been. ICRP wants to develop dosimetric models and environmental geometries for various species, in order to assess background dose rates, and effects on early mortality, morbidity, reproduction, and DNA damage, yet we see them repeating the same mistaken assumptions simply because they are easy or familiar. NIRS nominated two knowledgeable PhDs to Committee #5 but ICRP has completely ignored the nominations after publicly announcing that they would welcome varying perspectives. **Call on ICRP to accept Dr. Judith Johnsrud and Dr. Dennis Nelson to ICRP Committee #5 to reflect some balance in expertise and perspective.**

Segmented Doses Ignore Total Dose a person could receive

ICRP bases its new dose limits on a two-tier system of protection. In 1990, ICRP identified three *classes* of exposure: public, worker, and medical. The ICRP does not limit additive doses when a person is a member of two or more *classes*. This means one can be exposed on the job plus as a medical patient but the doses would not be added together to protect for both *classes* of exposure. Tier 1 recommends a *dose constraint*, the dose from a single radiation source (like a nuclear reactor) to an individual member of one of the *classes*, and a *dose limit* is the sum of all the doses to an individual in one of the *classes*. The ICRP says it set this level to protect the most exposed individual, ergo, NOT the most vulnerable. ICRP regards exceeding this *dose constraint* as a “failure,” but suggests no enforcement. Tier 2, *optimization of protection*, purports to minimize doses without impeding the progress of the nuclear industry. **We call on ICRP to combine and limit the doses from all classes, and to adopt a goal of protection regardless of industry costs.**

Conclusions for Commenting to ICRP and national officials

To reiterate some of the bolded suggested comments above, NIRS urges ICRP to:

- (a) Discourage and prohibit deregulation of nuclear materials and activities. Reject the notions exclusion and exemption for manmade radioactive materials, and practices (artificial sources of exposure). Reject use of a threshold to deregulate nuclear materials. .
- (b) Reject any increases in allowable doses to workers or public; instead, lower the permissible doses, recognizing that for some individuals, these doses may STILL not be protective enough. This is to take into account research findings on low-level radiation impacts.
- (c) Replace Reference Man or Most Exposed Individual with the most sensitive members of potentially exposed populations in regulations and supporting calculations.
- (d) Expand consideration of radiation impacts to include all deleterious effects, not just fatal cancers and gross genetic effects for the first two generations. Incorporate increased radiation risks from the studies of the bystander effect and genomic instability.
- (e) Support the NIRS’ nominations to ICRP’s new Committee #5 on nonhuman and environmental exposures, Drs. Judith H Johnsrud and Dennis Nelson from the US.

Comment to ICRP by December 2004 AND contact NRC, EPA, DOE, DOT, physicians, and state and local radiation regulators to insist that protection be increased, not reduced.

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BOX: “Sievert” and “milliSievert” (mSv) are international units of radiation dose equivalent measurement. U.S. regulators still use the terms “rem” and “millirem.” One Sievert equals 100 rem. One mSv equals 100 mrem. One millirem equals 10 microSieverts or 0.01 mSv.

Doses above 400-500 rem (4-5 Sievert) are usually lethal to 50% of an exposed population, but health effects, including cancer, are caused at much lower doses. Every dose, no matter how low, increases health risks.