

## **ISDE Resolution on Radiologic Risk from Medical Diagnostic Imaging (2007)**

The Directory Board of the International Society of Doctors for the Environment (ISDE)

**Understanding that** medical diagnostic radiation with (x and  $\gamma$  rays in radiology and nuclear medicine) is a proven class I carcinogen (1) even at the lowest doses; that the level of this exposure is continuously rising(2) and totals the dose equivalent to at least 100 chest x-rays per person per year in industrialized countries (3,4); and that this level of exposure corresponds to an attributable extra-risk of cancer of at least 2 % in the general population (5,6);

**having appreciated** the increasing availability and also the increasing inappropriate rate of use (in at least 30% al all cases) of imaging tests (7); also appreciating use of those test modalities with highest radiological dose exposure (such as scintigraphy, TC-PET, or Multislice Computed Tomography) (8,9);

**and that** the awareness of radiological doses (and corresponding long-term risks) of common radiological and nuclear medicine examinations is surprisingly low among patients, prescribers and practitioners, including radiologists, nuclear physicians, cardiologists and paediatricians; and that practitioners very often ignore or substantially underestimate doses of very common examinations (10-13);

### **noting that:**

a) European Commission (7) and National (14) medical imaging guidelines suggest to minimize the use of ionizing studies, whenever the information can be obtained by careful clinical evaluation and/or by alternative non-ionizing techniques;

b) defensive medicine, demand from patients, and marketing messages propel increased use of diagnostic methods with high biological risk (chest MSCT, CT-PET, virtual colonoscopy, and so on) particularly for mass screening, in the absence – and sometimes in presence of contrary – scientific evidence (15,16);

c) recent updates, from authoritative international consensus on the estimates of radiological risk have reemphasized the validity of the “linear-no threshold” model (direct correlation between dose and risk, with no safe dose) (16, 17); the best available risk estimates for a cardiac scintigraphy with thallium or a thoraco-abdominal CT give a dose equivalent to about 1000 chest x-rays with a lifetime extra-risk of 1 cancer in 500 exposed adult males, 1 in 400 exposed adult females, and 1 in 100 in children <1 year;

d) there is legal vulnerability (with extensive room for class action suits) from inappropriate prescription of ionizing testing, of insufficient informed consent (18), on the basis of existing Euratom law, 30 June 1997 (19): article 3, “principle of justification”: if an exposure cannot be justified, it should be avoided; article 5, “principle of responsibility”: both the prescriber and the practitioner are responsible for the justification of the test exposing the patient to ionizing radiation.

**Recalling that** patients should be empowered to share their physician's diagnostic choices on the basis of the Oviedo Convention (1997), and Chart of Medical Professionalisms in the New Millennium (2002), yet they are systematically not made aware of doses (and long-term risks) of the examinations they undergo by a variety of factors not necessarily related to the patients immediate benefit (20);

**CALLS ON** Governments and all relevant authorities, for health as well as for sound social, economic and scientific reasons, to:

- Reinforce in medical practice the guidelines on medical imaging of the European Commission 2001 and Euratom law;
- Introduce stringent quality control of imaging prescription, starting in clinical area (such as pediatrics and obstetrics) with higher biological impact (and downstream costs) of radiation-induced damage;
- Promote adequate information campaign to the public, warning of the risks and damages of inappropriately requested examinations;
- Audit for inappropriate and unjustified use of imaging testing including for research purposes.

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