Main description of the recommendations of the International Commission on Radiological Protection (ICRP) concerning emergency exposure of workers

ICRP Publication 103

The 2007 Recommendations of the ICRP

(Limit of radiation exposure dose to embryo/fetus)

(187) <Omission> The Commission strongly recommends that in order to protect the embryo/fetus or infant, females who have declared that they are pregnant or are nursing should not be involved in emergency actions involving high radiation doses.

(Emergency exposure situations and dose limit)

(247) Dose limits do not apply in emergency exposure situations where an informed, exposed individual is engaged in volunteered life-saving actions or is attempting to prevent a catastrophic situation. For informed volunteers undertaking urgent rescue operations, the normal dose restriction may be relaxed. However, responders undertaking recovery and restoration operations in a later phase of emergency exposure situations should be considered as occupationally exposed workers and should be protected according to normal occupational radiological protection standards, and their exposures should not exceed the occupational dose limits recommended by the Commission. Since the Commission recommends specific protection measures for female workers who have declared that they are pregnant or are nursing an infant, and taking account of the unavoidable uncertainties surrounding early response measures in the event of an emergency exposure situation, female workers in those conditions should not be employed as first responders undertaking life-saving or other urgent actions.

Reference level of occupational dose limits in an emergency exposure situations (Table 8)

-	Lifesaving operations (volunteers informed)	If benefits to others exceed the risk of the rescuer No radiation exposure dose limit
-	Other emergency rescue operations	1,000 or 500 mSv
-	Other rescue operations	≦ 100 mSv

ICRP Publication 75

GENERAL PRINCIPLES FOR THE RADIATION PROTECTION OF WORKERS

(Response to workers who have been exposed to radiation exceeding the dose limit due to accident, etc.)

(60) In accident and emergency situations, doses may exceed the dose limits. Doses from external radiation around or somewhat above the dose limits are unlikely to call for anything more than an investigation of the causes so that the appropriate lessons can be drawn. They may call for retraining of the worker or transfer to other duties if there is evidence of irresponsible actions, but such decisions should not be based on dosimetric information. In some cases of internal exposure giving committed doses around the dose limits, intervention may be appropriate.

(61) If continued exposure is permitted, it would be appropriate for the management, in consultation with the worker, and subject to any requirements of the regulatory agency, to establish a formal dose limitation regime to be applied for the remainder of the control period. A temporary dose restriction based pro-rata on the remaining period of time to which the dose limit relates might be appropriate.

(62) Consideration also needs to be given to the subsequent management of a worker who as a result of an accident has received a significant exposure but whose total dose for the relevant period has not exceeded the relevant dose limit. In those situations where continuation of normal working practice during the remainder of the period may lead to the total dose exceeding the relevant dose limit, management may decide to change the worker's duties to avoid this happening. While recognising the legal status that regulatory agencies have given to the dose limits, the Commission recommends that such situations should be dealt with in a flexible manner. Provision should, therefore, be made for management to be able to invoke similar arrangements to those in the previous paragraph.

(148) The workers involved in all categories should be informed on request of the doses received and the possible health consequences. The doses received in emergency situations should not compromise the further employment of the worker in work with ionising radiation. However, where a worker has received an emergency exposure around or above the threshold for deterministic effects, the worker should be referred to a physician.

(Radiation work after overexposures)

(271) Exceeding a dose limit does not constitute a sufficient reason for excluding the workers from their usual occupations, but the event may disclose medical reasons for such exclusion, e.g.

epilepsy. If the workers contributed to the overexposures by their own actions, their suitability for the type of work involved should be reconsidered. Temporary suspension from normal duties should also be considered if further exposures or intakes might prejudice the interpretation of any desirable biological investigations.

ICRP Publication 60

The 1990 Recommendations of the ICRP

(Distinction between normal exposure and emergency exposure)

(225) In addition to the exposures resulting directly from the accident, there will be exposures of emergency teams during emergency and remedial action. Even in serious accidents, these can be limited by operational controls. The doses incurred are likely to be higher than in normal situations and should be treated separately from any normal doses. Emergencies involving significant exposures of emergency teams are rare, so some relaxation of the controls for normal situations can be permitted in serious accidents without lowering the long-term level of protection. This relaxation should not permit the exposures in the control of the accident and in the immediate and urgent remedial work to give effective doses of more than about 0.5 Sv except for life-saving actions, which can rarely be limited by dosimetric assessments. The equivalent dose to skin should not be allowed to exceed about 5 Sv, again except for life saving. Once the emergency is under control, remedial work should be treated as part of the occupational exposure incurred in a practice.

(Relation between radiation dose limit and lifetime effective dose)

(161) <Omission> The second is that the results indicate that a regular annual dose of 50 mSv, corresponding to a lifetime effective dose of 2.4 Sv, is probably too high, and would be regarded by many as being clearly so. In particular, the reduction of life expectancy at this level (1.1 years) and the fact that there would be a probability exceeding 8% that the radiation hazards in a worker's occupation would be the cause of his death, albeit at a late age, would be widely seen as excessive for a group of occupations many of which are of recent origin and should therefore be setting an example.

(162) On the basis of the data presented above, the Commission has reached the judgement that its dose limit should be set in such a way and at such a level that the total effective dose received in a full working life would be prevented from exceeding about 1 Sv received moderately uniformly year by year and that the application of its system of radiological protection should be such that this figure would only rarely be approached. The final choice of limits and the way in which they should be expressed are influenced by the way in which the limits will be applied in practice. The need to ensure that the limits provide protection against deterministic effects also has to be taken into account.