

Do Medical physicists have a role in case of a nuclear or radiological emergency?

Although medical physicists have a solid knowledge in radiation dosimetry and a fairly good understanding of radiation biology, there seems to be only a few instances where they were involved in case of nuclear or radiological emergencies. Many countries with a large nuclear power programme have the knowledge and know-how to deal with a nuclear or radiological emergency. But this type of knowledge is not available everywhere, especially in countries that do not have an important nuclear power programme, or in countries with only research reactors, medical and industrial radioactive sources. Even in countries with important nuclear power programme and with well-established emergency preparedness to deal with nuclear and radiological emergencies, the question is not superfluous. No matter where the scenario of a nuclear or radiological emergency takes place, if medical physicists are suddenly called for support, are they prepared for this task? If not, what could be done to ensure that their expertise is used when needed? In the event of a major nuclear or radiological emergency and in the worst possible scenario, some countries may be faced with the urgent needs to monitor contamination and irradiation levels on and in hundreds or thousands of people. That may involve the use of simple radiation monitors, but sometime the use of more complex equipment such as whole body or thyroid counters is needed. There are radiation protection officers and health physicists who are fully qualified to conduct the measurements, but will they be available in sufficient numbers? If not, wouldn't the support of dozens or hundreds of well qualified medical physics experts be an added value to the civil defence or military teams? Medical physicists are well trained in radiation dosimetry and could contribute to dose assessments, dose measurements, review and validation of dosimetry data and also for education and training of civil defence teams.

Going back to the worst case scenario in the event of a major nuclear or radiological emergency, are medical physicists well prepared to assist and effectively contribute in the management of these types of events? Most current medical physics curricula include courses and laboratory training in radiation dosimetry, instrumentation, and health physics –including shielding, radiation monitoring, and radiation biology, all of which are relevant to nuclear and radiological emergencies. However, there is a need to provide additional training to medical physicists prior to their involvement in nuclear and radiological emergencies. This additional training could include, for example a review of radiation/contamination levels, as applicable in each country and also the guidance that medical staff-responsible for patient triage and treatment may need in specific situations. Furthermore, the development and wide dissemination of a resource package to assist medical physicists would be needed. Such a package should be reviewed and agreed by emergency preparedness centres to ensure that the role of medical physicists is well understood and accepted by hospital managers, national authorities responsible for emergency preparedness. The package would be made available to all medical physicists who would be integrated in emergency preparedness teams, and specialized workshops would be conducted. National medical physics societies and health physics/radiation protection societies could open a discussion forum on this topic. An international seminar could help reach a global consensus on what might be the role of medical physicist in case of a nuclear or radiological emergency.

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