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## JUSTIFICATION OF NOVEL PRACTICES INVOLVING RADIATION EXPOSURE

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Presentation preference: Poster Only

Major scientific thematic areas: TA2 - Radiological Protection Systems and Regulation

The concept of “justification” of practices has been one of the three basic principles of radiation protection for many decades. The principle is simple in essence – that any practice involving radiation exposure should do more good than harm. There is no doubt that the many uses of radiation in the medical field and in industry generally satisfy this principle, yielding benefits that could not be achieved using other techniques; examples include CT scanning and industrial radiography.

However, even in the early period after the introduction of the justification principle, there were practices for which the decision on justification was not clear and for which different decisions were made by the authorities in different countries. Many of these involved consumer products such as luminous clocks and watches, telephone dials, smoke detectors, lightning preventers and gas mantles. In most cases, these practices were relatively small scale and did not involve large exposures of either individual workers or members of the public. Decisions on justification were therefore often made by the regulator without extensive national debate.

Over recent years, several practices have been proposed and undertaken that involve exposure to radiation for purposes that were generally not envisaged when the current system of radiation protection was created. Some of these practices were reviewed during a recent symposium held in Dublin, Ireland and involve, for example, the x-raying of people for theft detection purposes, for detection of weapons or contraband, for the prediction of physical development of young athletes or dancers, for age determination, for insurance purposes and in cases of suspected child abuse. It is particularly in the context of such novel practices that the need has emerged for clearer international guidance on the application of the justification principle.

This paper reviews recent activities of the IAEA with respect to these issues, including the development of an IAEA Safety Report. Following the experience gained in preparing the report, this paper describes a systematic approach to obtaining the necessary inputs to making decisions on justification and illustrates its possible application to some of the more controversial proposals, including some examples based on past and recent regulatory decisions.

The systematic approach requires: a precise identification of the practice and the legal persons responsible for the proposal; identification of the body responsible for the justification decision and clarification of its procedures; the characterisation of the practice, including assessment of the benefits and detriments, both radiation and others; evaluation of alternatives not involving radiation exposure; assessment of ethical and legal aspects; stakeholder involvement; and communication with all parties involved, including an analysis of the practice that puts the exposures in context.