the cell nucleus, 3 um away from the colloid/cell interface. Uncertainties and variations in the parameters of the thyroid model were considered.

When thyroid doses due to I-129 releases are assessed, by either the specific activity or the critical pathway models, the conservative environmental and biological assumptions usually made lead to a large margin of safety[3]. If "average" doses are used instead of the microdosimetric dose distribution, an additional safety factor of about 2 is obtained.

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OCCUPATIONAL RADIATION STANDARDS BASED ON MORBIDITY RISK

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The establishment of occupational radiation standards on the basis of morbidity risks expressly stated to be acceptable in other industries or human activities was investigated.

The maximum occupational yearly radiation doses recommended by ICRP[1] are 5 rem for the whole body, gonads and bone-marrow and 30 rem for the skin, bone and thyroid. The criterion for establishing these maximum doses is the prevention of acute radiation effects as well as the limitation to an acceptable level of risks due to delayed effects. However, acceptable risk has not yet been quantified by the ICRP or any other international organization dealing with maximum tolerable radiation doses. Different approaches to the quantification of acceptable risk in the nuclear industry have been discussed e.g. a) the cost-benefit approach[2] and b) the comparison with accepted risks in hazaradous activities[3,4]. Since it is difficult to quantify the benefits expected from the nuclear industry, it seems that the second approach may be more appropriate in this case.

Acceptable risks in the nuclear industry that have been proposed to date[3,5-7] have been based on accepted death risks in other industries and

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human activities. However, in the nuclear industry morbidity risks appear to be more significant than mortality risks. Furthermore, the mortality risks in industries and other human activities should be considered as factually "accepted", but have not been explicitly defined as "acceptable".

While data on morbidity risks in different human activities is very sparse, some statistical data on morbidity frequencies in different industries have been gathered (e.g. Metropolitan Life Statistical Bulletin). Moreover, for the asbestos industry, and for industrial noise environments, permissible levels of pollutants or damaging conditions have been established[8,9] as tolerable based on acceptable morbidity risks. Comparison of the tolerable radiation morbidity risk with those acceptable in the asbestos industry and industrial noise environments, indicates that the occupational radiation standards should be of the order of 2 rem/y for the whole body and bone marrow and 30 rem/y for the skin.

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SURFACES OF TRANSIT TIME DISTRIBUTION IN TIME-VARYING SYSTEMS

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Most of the systems and processes in nature are in a non-steady state. Systems in a steady state have constant parameters, and the transit time distribution function $h(\tau)$ is dependent on transit time τ, but not on chronological time t. In the theory of time-varying systems[1] the transit time distribution functions are defined by a surface $h(\tau,t)$ with 2 time variables, τ and t.