

RADIATION HAZARDS

YOUR grandparents and great grandparents had less to worry about than our generation, mainly because they had less scientific knowledge than we have. They had no atom bombs, no reactors, or H-bombs, and hence didn't need to concern themselves with the hazards of radiation. They had them, nevertheless, but not from fission products. Mankind has always been exposed to atomic radiation. This came from cosmic rays, from naturally radioactive elements in the earth (such as uranium, radium), or in the human body (such as potassium 40 or carbon 14).

In our time, artificially produced radioactivity is being added to our background natural load. It is being added from atomic industries and users of radio elements, and from the explosion of nuclear devices. Workers are being exposed to possible additions in medicine, radiology, dentistry, and nursing, in atomic energy plants, in mining uranium or thorium, and in industrial or scientific use of reactors or radioactive isotopes. Patients derive additional irradiation from X-rays and other ionising radiations and radio-elements used in diagnosing and treating disease. Anybody may be adding to their load by wearing luminous watches, standing on shoe fitting X-ray machines, or, not very widely yet in our land, by viewing television.

The world over, at the moment, attention is centred on the additional radiation hazard accruing from the explosion of H-bombs. We can get this into proper perspective as far as genetic risks go, by realising that the approximate dose to the reproductive organs, expressed as a percentage of the natural background, is less than one per cent from test explosion fall out, but one per cent from luminous watches and clocks, and somewhat less than one per cent from television sets.

Genetic effects, mutations in offspring, occur naturally, but they are speeded up by radiation. They are thought to be irreversible and cumulative. The amount received by any one individual at a particular time is not so important as the total accumulated dose of all radiation to all members of the population, from the beginning of each individual's life to the time that the offspring were conceived. Fall out risk is but a small part of the problem of guarding the race from man-made radiation's genetic effects. Diagnostic X-rays could be much more damaging if over-used and without adequate protection, but the profession is alert to the over-use problem, and our country is leading the world in protecting the people from occupational exposure.

Apart from effects on the reproductive organs, with genetic hazards, there is a second and frightening danger from

THIS is the text (slightly abridged) of a talk on health, broadcast recently from ZB, ZA, YA and YZ stations of the NZBS by Dr H. B. Turbott, Deputy-Director-General of Health.

radiation on the human body, the liability to produce cancer. Whenever a nuclear weapon is exploded or atomic energy released in a reactor, radioactive isotopes are produced, all harmful to man, but particularly strontium 90. It lives a long time, having a half life of 28 years. On falling on to the ground it finds its way into food such as milk, meat and vegetables. Getting into our bodies it settles in our bones. Its biological half life is seven and a half years, so it has plenty of time to emit radiations which may produce bone and other cancers.

In the British high altitude H-bomb explosion in the Pacific there was little

fall out because almost all the radioactivity went up into the stratosphere. It comes down very slowly, about 10% per year, and meantime spreads out over the whole world. It falls mainly with the rain, fairly evenly, everywhere. By this time, short lived radio active elements have mostly decayed, but the long lived ones, strontium 90 and caesium 137, drop on the ground. Strontium passes into plants and animals and through eating these, into mankind, particularly through dairy products. Herein lies the fear about H-bomb tests. Every additional amount of strontium absorbed by the bone confers a certain probability of bone tumour formation. Nobody has yet sufficient factual knowledge to assess the hazard to the human race.

Whether the hazards come from nuclear weapons or from the use of radiations for peaceful purposes, they need control. United Nations has a special agency working to determine risks and precautions needed, and World Health is interesting itself in the problem, too.

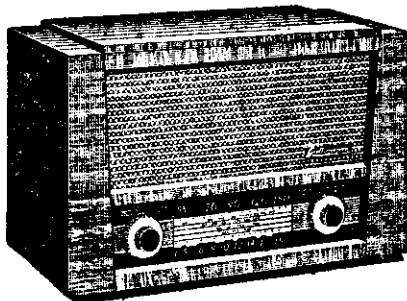


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