



# Flowering under Enhanced Ionising Radiation Conditions and its Regulation through Epigenetic Mechanisms

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## INTRODUCTION

This section contains information on health effects associated with ionizing radiation. It focuses on the health effects associated with radiation doses to which workers may be exposed on a daily basis [1]. You can find examples of ionizing radiation in professional settings on the overview page. Workers can be exposed to ionizing radiation in different ways, depending on their job duties [2]. The health effects of radiation dose depend, among other things, on the type of radiation emitted, the radiation dose received by the worker, and the part of the body exposed [3]. The radiation dose depends on the duration of exposure, the amount of radiation emitted by the source, the distance from the source, and the amount and type of shielding in place. When ionizing radiation interacts with cells, it can damage cells and genetic material [4]. If not repaired properly, this damage can lead to cell death or potentially harmful alterations of DNA.

## DESCRIPTION

A deterministic effect appears after reaching a threshold dose [5]. Sub-threshold doses are not expected to produce specific effects. Skin flushing is an example of a deterministic effect at a threshold dose of approximately 300 rads. It does not accurately account for all deterministic health effects but is sometimes described as “short-term” health effects [3]. Stochastic effects occur through statistical chance. The likelihood of effects occurring in a population increases with dose, and the severity of effects is independent of dose [1]. Cancer is the most important stochastic effect that can be attributed to radiation doses, often many years after exposure. Probabilistic health effects are assumed to have no threshold dose below which

they do not occur [5]. For this reason, radiation doses are not considered completely “safe” and doses should always be kept as low as reasonably achievable (ALARA). Although it does not accurately account for all probabilistic health effects, it is sometimes described as a “long-term” health effect [2]. Radiation Department employees may be repeatedly exposed to small amounts of ionizing radiation while on duty. The resulting dose values are mostly below the threshold dose required for deterministic health effects to occur [4]. Stochastic health effects such as cancer can occur years after the radiation dose. The probability of health problems is proportional to the radiation dose received.

## CONCLUSION

Skin Radiation Injury (CRI) occurs when high doses of radiation, 200 rads or more, damage the skin. Symptoms of CRI can appear within hours or days or weeks after exposure and include itching, tingling, unusual redness of the skin, and swelling from fluid accumulation. Depending on the radiation dose, symptoms of acute radiation syndrome may also occur. CDC provides additional information on radiation dose and symptoms of CRI. This includes CRI factsheets for the general public and clinicians. The risk is much lower when the dose of radiation is low and/or when it is applied for a long period of time because the chances of repairing the damage are higher. However, the risk of long term consequences such as cancer, which can develop years or even decades later, still exists. This type of effect does not always occur, but its probability is proportional to the radiation dose.

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## CONFLICT OF INTEREST

The author declares there is no conflict of interest.

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