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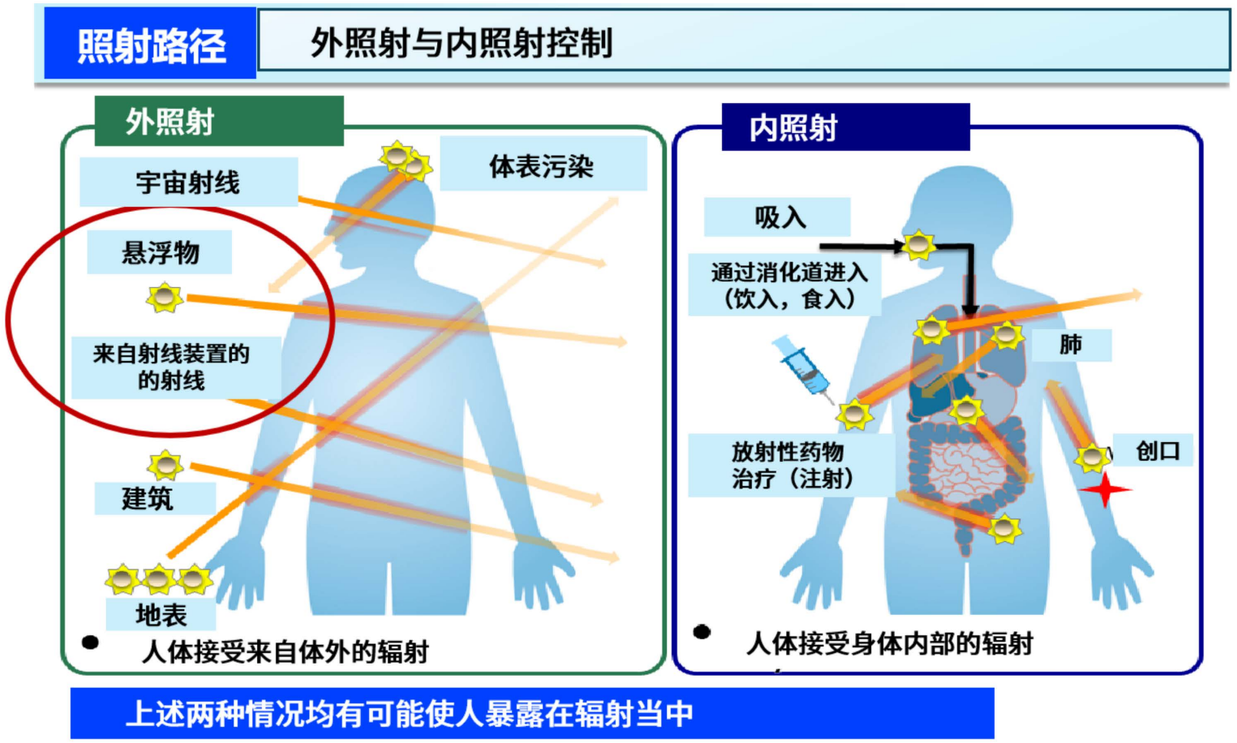
安全时刻

HKUST(GZ)

NO. 019
2024年8月20日

电离辐射的风险及防控



辐射对组织或器官的损害取决于所接受的辐射剂量。一般认为，剂量越高，对人体的危害越大。

超过一定阈值，辐射会损害组织和/或器官的功能，并可能产生急性影响，如皮肤发红、脱发、辐射烧伤或急性辐射综合征。这些影响在较高剂量和较高剂量率时更为严重。

如果辐射剂量较低及/或辐射时间较长(低剂量率)，则辐射的风险相当低，但仍有可能造成白内障或癌症等长期影响。这种类型的影响不常发生，但其可能性与辐射剂量成正比。

外照射控制:

1. 屏蔽辐射源
2. 佩戴剂量仪和健康监护
3. 减少辐射暴露时间，和辐射源保持安全距离

内照射控制:

1. PPE（口罩，手套，护目镜等）
2. 辐射工作区域禁止饮食
3. 在良好的通风环境下进行操作

外照射风险:

n＞γ/X ＞β＞α

内照射风险:

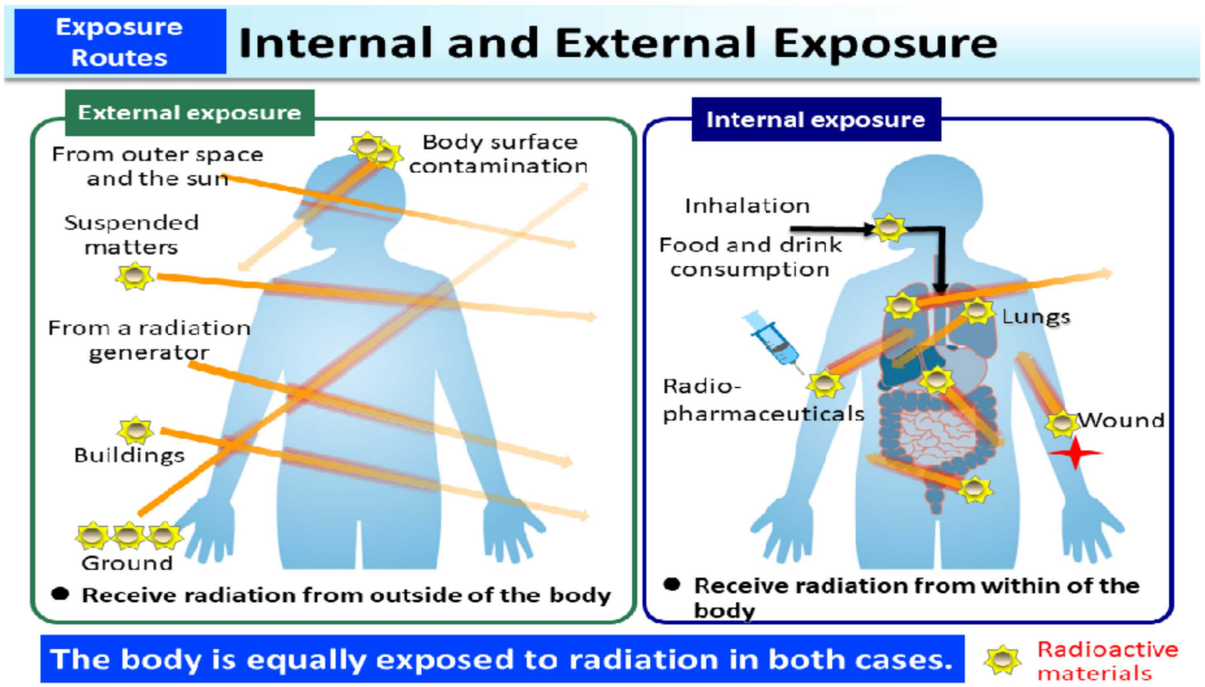
α＞β＞ γ/X （一般来说不会直接摄入中子)

Scan for more information

Safety Moment

NO. 019
AUG 20, 2024

Hazard and Control of Ionizing Radiation



External Hazard Control:

1. Isolate radiation sources.
2. Badge worn and monitor.
3. Reduce exposure time and keep safe distance from radiation sources.

Internal Hazard Control:

1. PPE (eg.mask,gloves and goggle etc.)
2. No food or drinks in radiation area.
3. operating area with good ventilation.

Radiation damage to tissue and/or organs depends on the dose of radiation received. Generally assumed that the higher the dose, the higher risk on human's body.

Beyond certain thresholds, radiation can impair the functioning of tissues and/or organs and can produce acute effects such as skin redness, hair loss, radiation burns, or acute radiation syndrome. These effects are more severe at higher doses and higher dose rates.

If the radiation dose is low and/or it is delivered over a long period of time (low dose rate), the risk is substantially low but there is still a risk of long-term effects such as cataract or cancer. Effects of this type will not always occur, but their likelihood is proportional to the radiation dose.

External Hazard:

$n > \gamma/X > \beta > \alpha$

Internal Hazard:

$\alpha > \beta > \gamma/X$

(Intakes of neutron source are rare)