

“Summary Visually indicative paint for detecting radioactive surfaces”  
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Biological damage occurs even at relatively low level radiological exposure (0.5~6 Gy). Hence, visual indicators of low level radio activity would greatly help clean-up of radio-contaminated surfaces and improve the work environment safety.

Candidate indicators of “Phase 1 : Identification & development of indicators” are Au-NP/dye conjugate system, organic scintillators system and aqueous coumarin system. Results of assessment are shown below.

	Visual Activity	Sensitivity	Safety
Aqueous Coumarin	Passive Fluorescence (UV needed)	Linearly sensitive at low level (0.1 ~ 50 Gy)	Non-bioaccumulative & relatively little toxicity
Organic Scintillation	Active Fluorescence (no UV needed)	Not-so-sensitive at low level radiation	Bioaccumulative & toxic in certain settings
Au-NP/dye	Visible color change (blue → pink)	Not yet determined	Non-bioaccumulative & relatively little toxicity

Undesirable	Moderate	Highly desirable
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Future directions are as follows:

- Additional assessment on visual identifiers.
- Development of sensitizers.
- Lowering the sensitivity to below 0.01 Gy
- Development of spray-paintable formulation.