

Revision to Public Radiation Safety Significance Determination Process

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Agenda

- Review Significance Determination Process (SDP)
 - Purpose of SDP
 - “Deterministic” yet risk-informed
 - Public Radiation Safety SDP
 - Describe the process for updating the RP SDPs
- Drivers for Change
- Revisions
 - Logic Diagrams
 - Other Changes
- Schedule
- Questions/Comments

SDP – Radiation Safety Cornerstones

- IMC 0609 Appendix C – Occupational Radiation Safety SDP
 - IMC 0308 Appendix C – Technical Basis for Occupational Radiation Safety SDP
- IMC 0609 Appendix D – Public Radiation Safety SDP
 - IMC 0308 Appendix D – Technical Basis for Public Radiation Safety SDP

Significance Determination Process

- Risk-informed process for determining safety significance of inspection findings
- Findings are an input to the reactor assessment process
- Objectives of an SDP
 - Characterize significance using best available risk insights
 - Provide an objective and common framework for communicating significance
 - Provide basis for timely assessment and enforcement
 - Used to risk-inform the inspection program

Risk and Radiation Safety SDPs

- Radiation Safety SDPs are deterministic in that explicit thresholds are provided for significance determinations
 - Regulatory requirements were used to establish most thresholds
 - Informed judgement is used to establish some thresholds
 - Example: Missing some data will lead to a Green Finding in REMP, missing an entire pathway will lead to a White
- The thresholds are risk-informed
 - Radiation limits aim to reduce the likelihood of biological effects
 - Reducing radiation exposure proportionately reduces the risk of biological effects
 - Reduced effectiveness of radiation safety program features increases the likelihood of unintended exposures

IMC 0609 Significance Thresholds (Qualitative)

- Green (very low safety significance)
 - Licensee performance is acceptable and cornerstone objectives are fully met with nominal risk and deviation
- White (low to moderate safety significance)
 - Licensee performance is acceptable but outside the nominal risk range
 - Cornerstone objectives are met with minimal reduction in safety margin
- Yellow (substantial safety significance)
 - Decline in licensee performance that is still acceptable with cornerstone objectives met but with significant reduction in safety margin
- Red (high safety significance)
 - Unacceptable loss of safety margin, however, sufficient margin exists to prevent undue risk to public health and safety

Public Radiation Safety SDP

- IMC 0609 Appendix D
- Focus Areas
 - Radioactive Effluent Release Program
 - Radiological Environmental Monitoring Program
 - Radioactive Material Control Program
 - Transportation-related findings

Operating Experience

- Two occurrences of licensees exceeding package limits during radioactive material transportation (2014 and 2016)
- Both licensees shipped low specific activity material in excess of the applicable limits in Type A packages
- Transportation SDP does not address scenarios where incorrect packaging is used (i.e. assumption that correct packaging is used and that a PD occurs while using that package)
- Required use of Appendix M on two occasions for the same issue

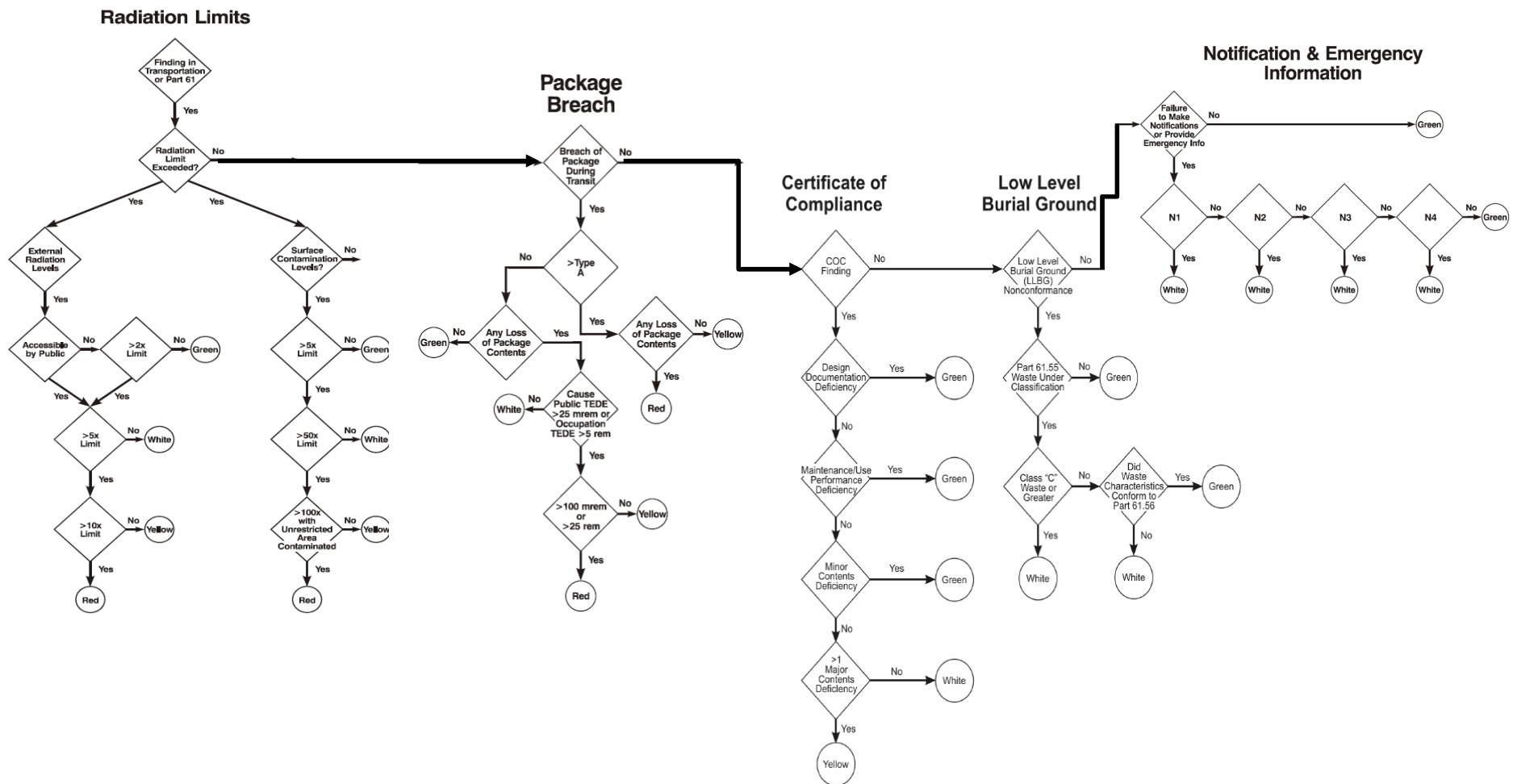
Drivers for Change

- Transportation SDP does not address the possibility of incorrect packaging being used for radioactive material shipments
- Further risk-informing certain aspects of the process
- Administrative updates to reflect current program and practices
 - Change to 71124 procedures
 - Refine regulatory basis statements

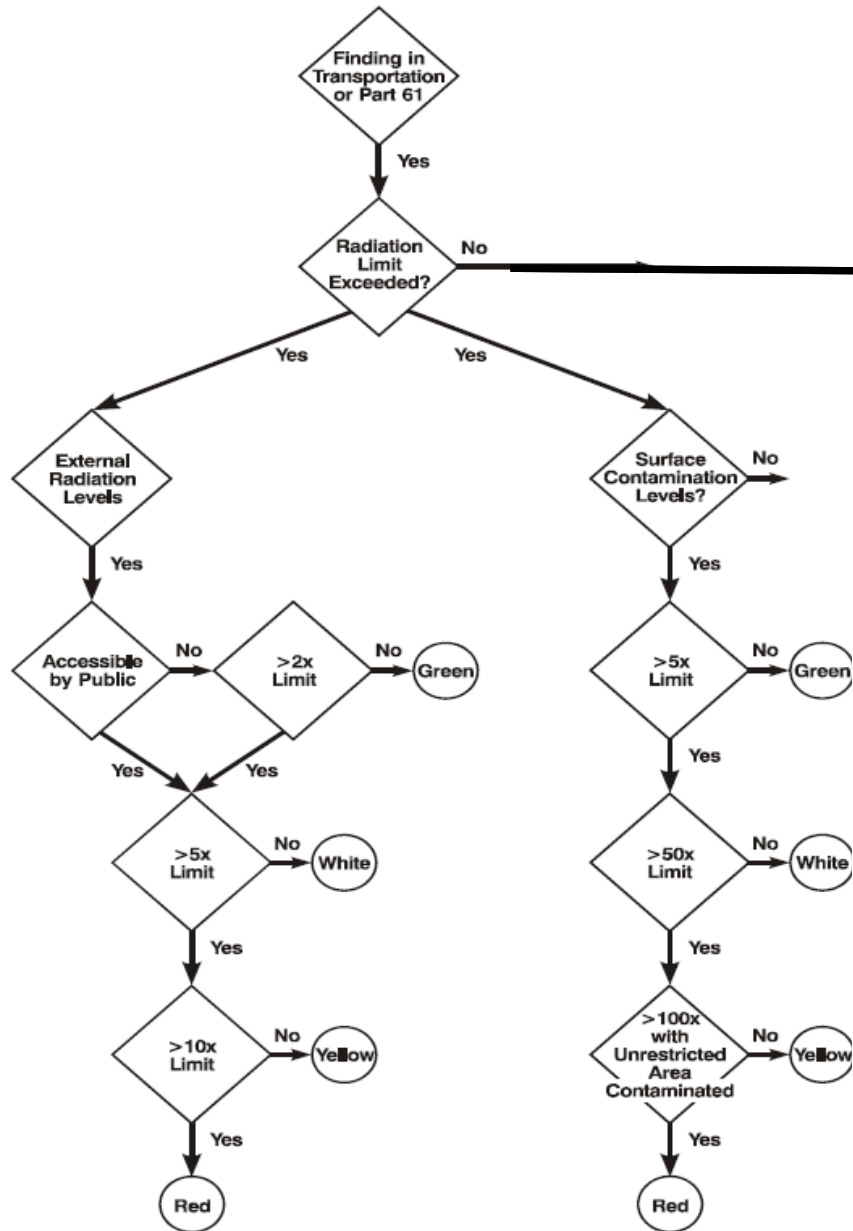
Process for Updating an SDP

- Described in IMC 0609
 - Similar to the original development of the SDP
 - Input considered from multiple stakeholders
 - NRC Staff (HQ and Regional Staff)
 - Public
 - Regulated Industry
- Participation primarily through internal workshops, public meeting(s) and letters

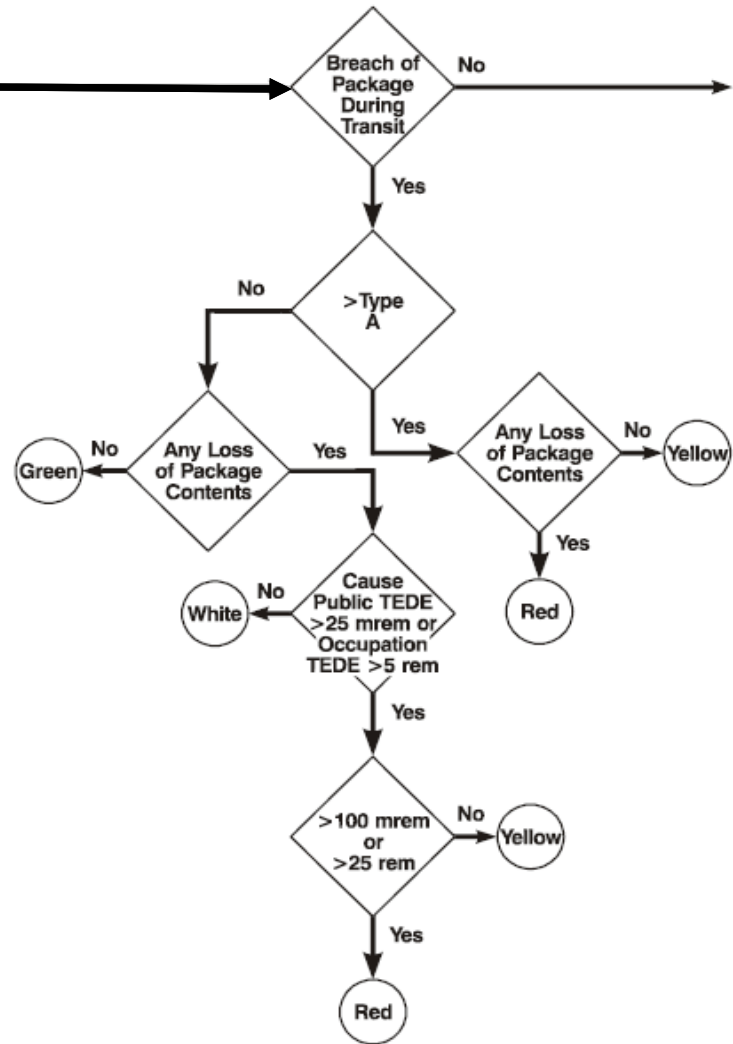
Public Radiation Safety SDP - Transportation



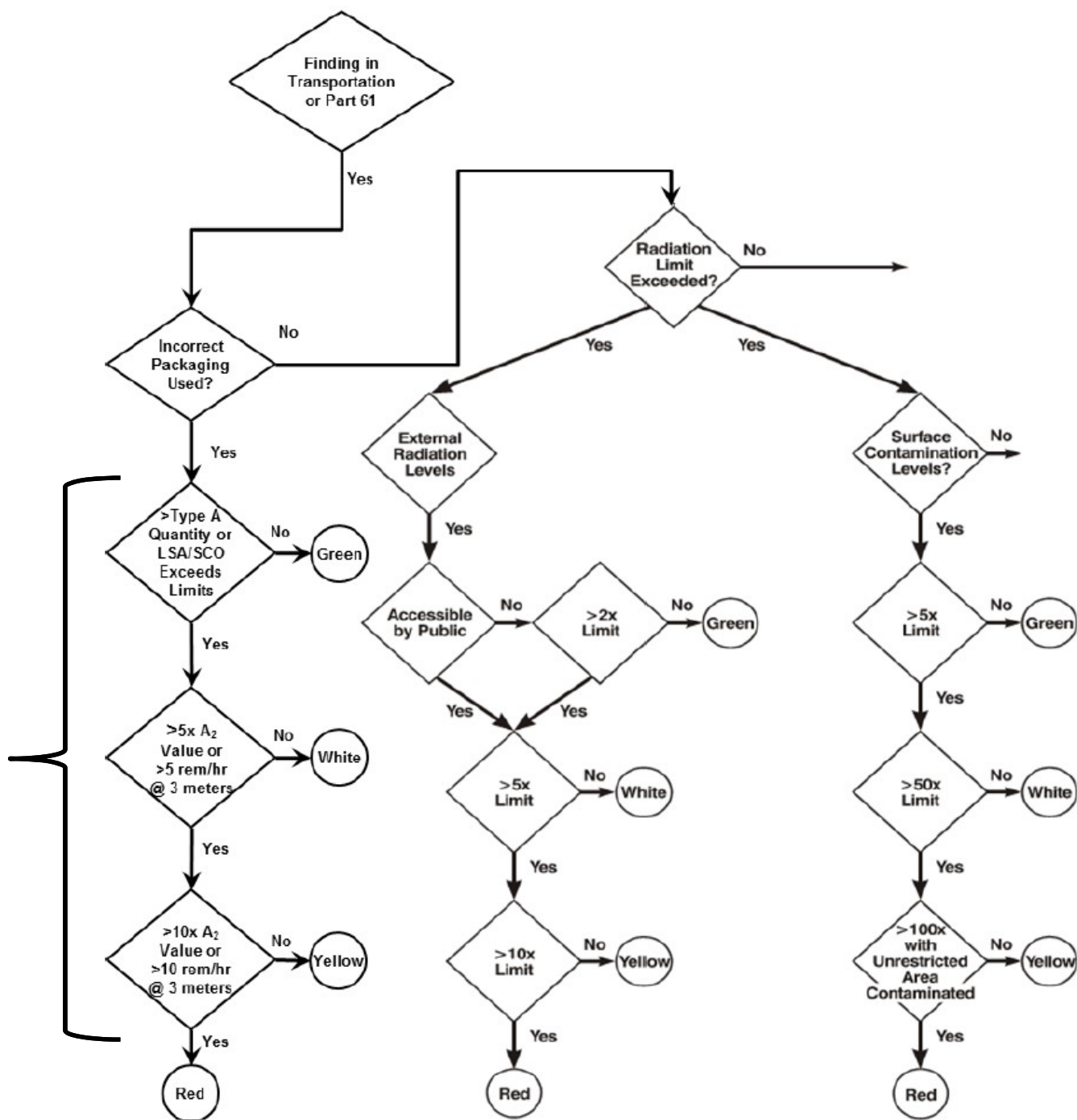
Radiation Limits

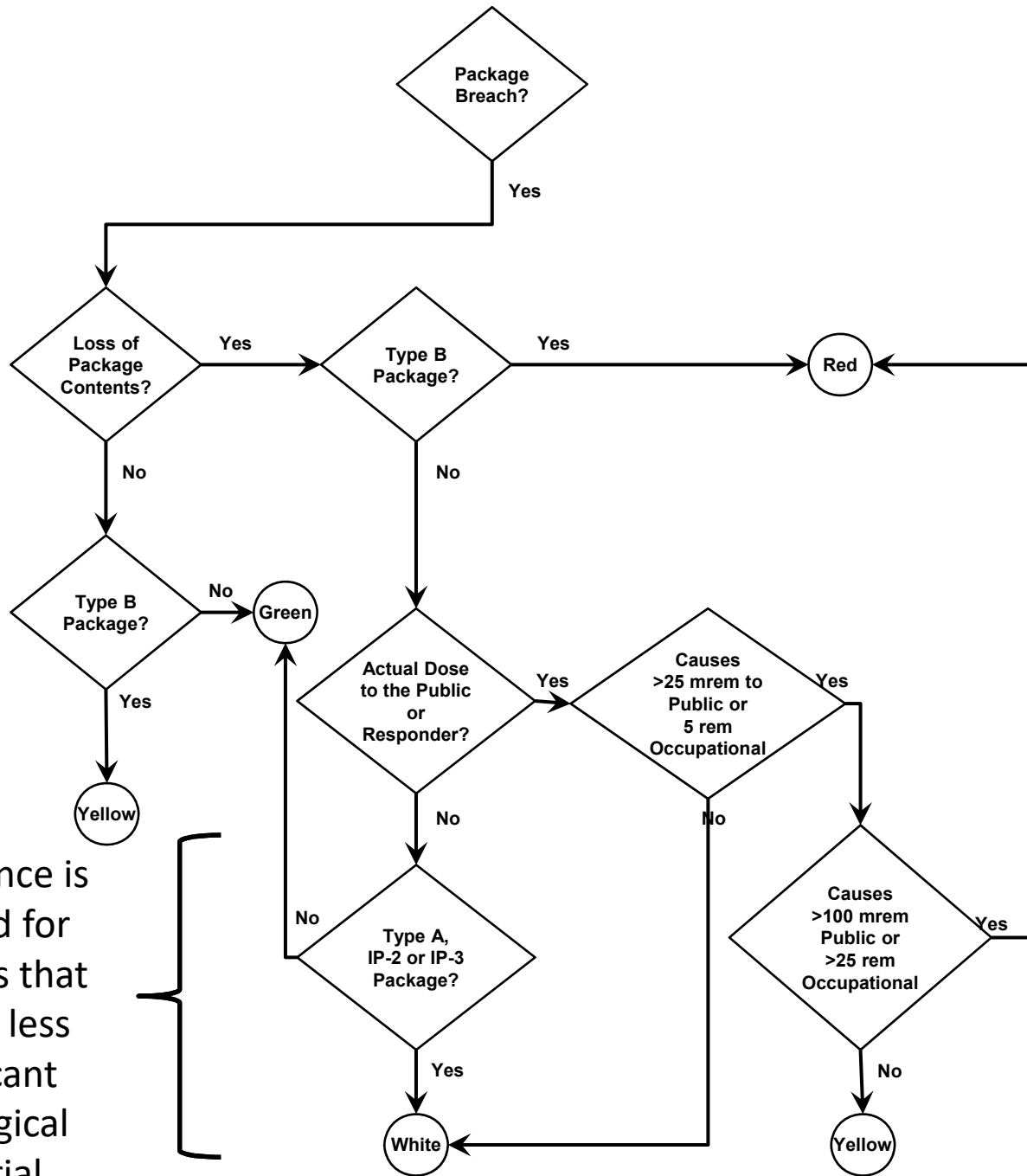


Package Breach



Graded approach
based on multiples
of the regulatory
limit (per 49 CFR
173.427)





Significance is reduced for packages that contain less significant radiological material

Other Changes

- Radiation Limits Exceeded
 - Likelihood of member of the public accessing an area may now be considered to mitigate significance
 - Small “hot spots” can be averaged with adjacent areas to a size limited by the cross-sectional area of the detector per long-standing NRC position
- Breach of Package during Transit
 - Defined “loss of package contents” as material that is distinguishable from background using a detector that is consistent with that called out in IMC 0612, App E

Plan/Schedule

September 2018	Inspector training at internal HP counterpart meeting at NRC HQ End stakeholder review period
~October 2018	Develop final draft Update Technical Basis Document
~November 2018	Commission interaction
Early 2019	Publish

Questions/Comments?

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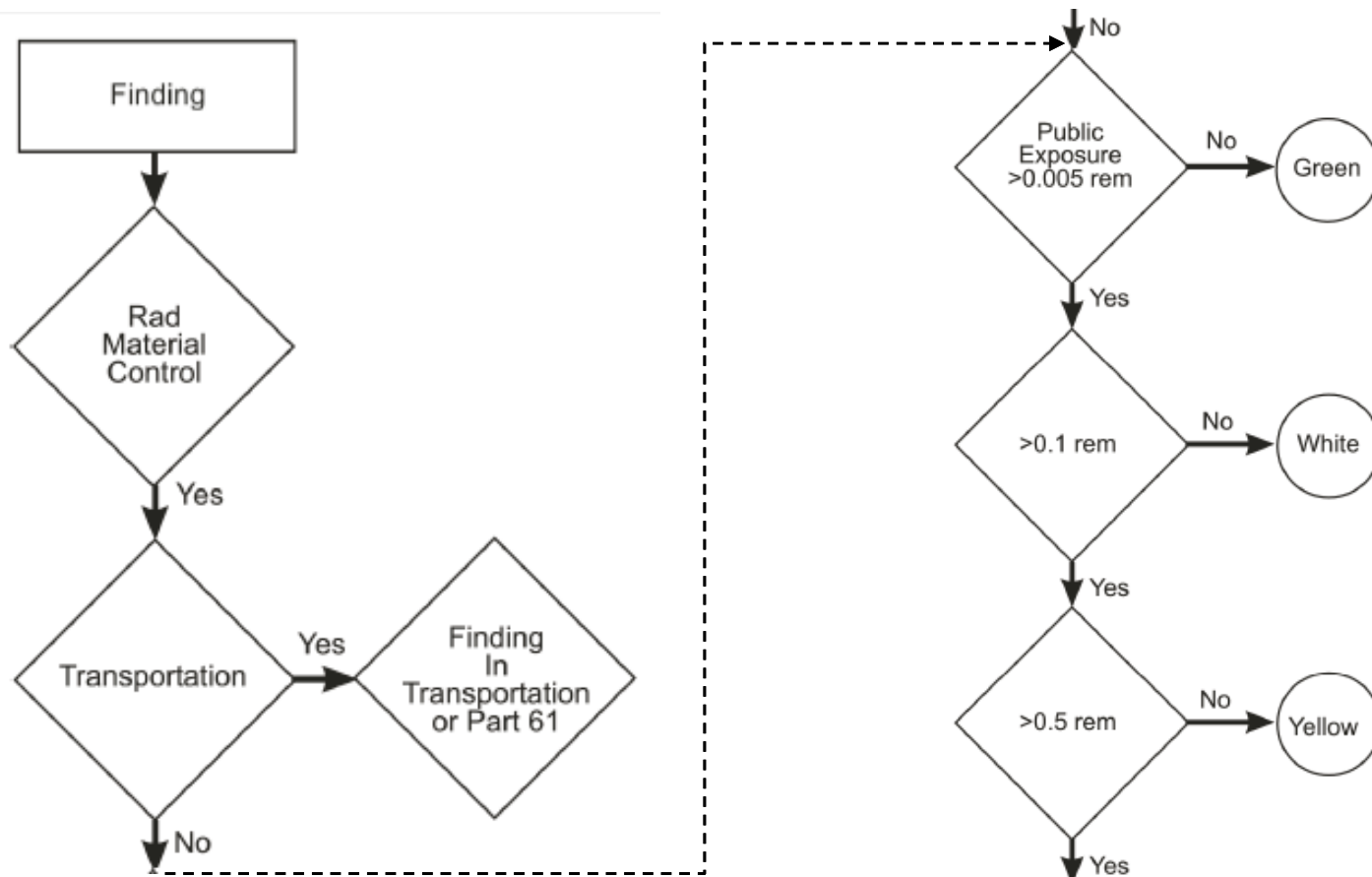
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Backup Slides

Public Radiation Safety SDP



Public Radiation Safety SDP

