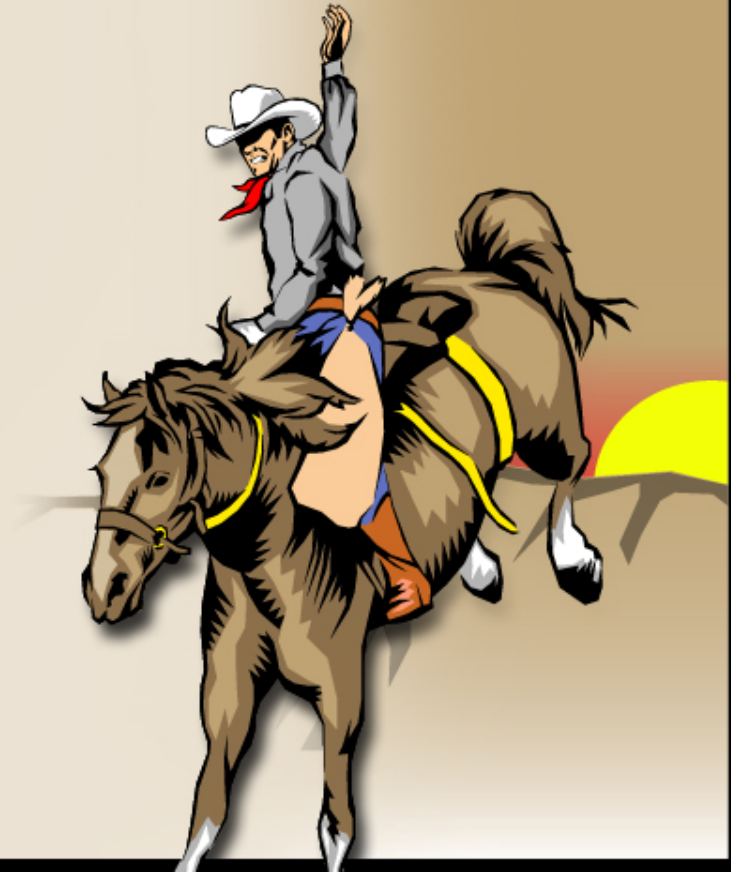


EPA Protective Action Guides

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Protective Action Guides Manual

- A multi-agency consensus guidance document
- Guidance for local and state public officials
- Revision is in progress
 - Federal agency review shortly
 - Public comment period – Summer 2007



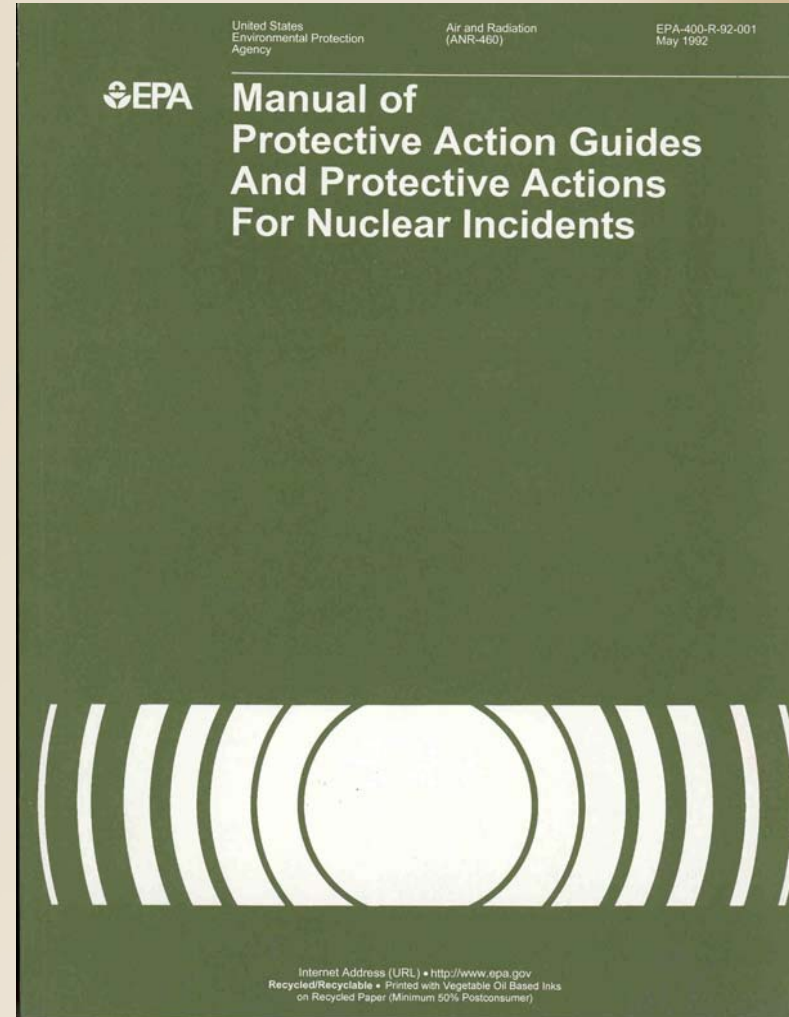
- First recommendations by Federal Radiation Council (FRC) in 1960s
- FRC work transferred to EPA as part of federal guidance function in 1970
- FEMA regulations (1982) reaffirmed EPA's role of providing PAGs
- EPA role in PAG development reaffirmed by FRERP (1996) and NRP (2004)



The 1992 EPA PAG Manual

EXPECT THE UNEXPECTED

- Currently in use
- Nuclear power plant accident focus
- Based on Federal Guidance Report 11 methodology (ICRP 26)
- Promised Water and Late Phase



Protective Action Guide

- A value against which to compare the projected dose to an individual from a release of radioactive material at which a specific protective action to reduce or avoid that dose is warranted.
- Projected dose is a dose that can be averted by protective actions.



Incident Response Phases

- Early Phase: The first hours to days until the release has stopped, when protective actions decisions must be made with little or no information
- Intermediate Phase: The weeks to months when more information is available, protective actions are more restrictive, and cleanup planning begins
- Late Phase: No longer an emergency response; activities shift to long-term recovery and cleanup



- 1992
- Evacuation/Shelter
1 – 5 rem
- Potassium Iodide (KI) 25 rem (adult) thyroid dose
- Worker 5, 10, 25, 25+ rem
- Today
- Evacuation/Shelter
1 – 5 rem
- KI threshold 5 rem (child) thyroid dose
- KI use: non-prescription sale approval (2001) and additional guidance (2003-2004)
- Worker 5, 10, 25, 25+ rem



Intermediate Phase

- Population relocation – \geq 2 rem (projected dose) first year or 0.5 rem subsequent years
 - 5 rem over 50 years
 - 1982 FDA Food PAG guidance incorporated
 - Drinking water PAG– just promised
- Population relocation – \geq 2 rem (projected dose) first year or 0.5 rem subsequent years
 - May drop 50 year PAG
 - 1998 FDA Food PAG guidance incorporated
 - Drinking water – 0.5 rem first year



- FDA guidance 1982
- ICRP 30 methodology
- 0.5 rem annual dose equivalent
- Derived Intervention Level (DIL) calculation equation
- FDA guidance 1998
- ICRP 60 methodology
- Most limiting of
 - 0.5 rem whole body dose or
 - 5 rem to most exposed organ or tissue
- DIL Calculated for 28 “marker” radionuclides



Drinking Water PAG

- Drinking water – 0.5 rem projected over first year
- Applicable to drinking water from any source
- EPA Safe Drinking Water Act levels after first year
- ‘Bridging language’ to explain FDA Food PAG (includes water) and EPA Drinking water PAG relationship



Food & Drinking Water PAGs

- The two PAGs are not necessarily additive
- If water only, apply EPA Drinking Water PAG
- If food only, apply FDA Food PAG
- If both, or unclear, apply FDA Food PAG
- Whenever possible, do incident-specific calculations rather than using defaults



PAGs - Drinking Water

- Local water system operators might implement one of these options:
 - Wait for Flow-By
 - Ration Clean Water Supplies
 - Treat Contaminated Water
 - Activate Existing Connections to Neighboring Systems
 - Import Water in Tanker Trucks
 - Import Bottled Water



Application to Terrorist Incidents

- Since 9/11, new threat of radiological terrorism
 - Radiological Dispersal Device (RDD)
 - Improvised Nuclear Device (IND)
- The new Department of Homeland Security (DHS) vetted the PAG Manual (Early and Intermediate PAGs) for RDDs or INDs
- Identified gap: Late Phase -- Recovery



Late Phase Guidance

- Promised in 1992
- Addressed by Department of Homeland Security (DHS) Consequence Management workgroup on radiological dispersal devices (RDD)/improvised nuclear devices (IND)
 - Federal Register notice published by DHS on January 3, 2006



Cleanup and Recovery

- Restoration of incident site to conditions as near as possible to pre-existing – creation of a “new normal”
- Removal of contamination
- Elimination of access restrictions
- End of food and water controls
- Return of population to homes and jobs



- Dept. of Homeland Security led a Subgroup to address recovery and cleanup issues
- Subgroup determined that a numeric 'cleanup level' was not useful because of the extreme range of impacts
- Agreed to optimization approach loosely based on "Framework for Environmental Health Risk Management" (1997)
- Details to be developed by Operational Guides Technical Working Group - DOE



- A process used to determine the societal objectives for expected land uses, develop and evaluate options and approaches, and select the most acceptable criteria
- Flexible process that employs quantitative and qualitative assessments applied at each stage of site restoration decision-making, from evaluation of remedial options, to implementation of the chosen alternative



Optimization Process

- Variety of dose or risk benchmarks identified from state, Federal or other sources
- Use benchmarks as gauge to analyze various options for remediation
- Establish cleanup goals based on the optimization analysis



Factors In Opt Process

- Nature of the incident – size, contaminants, location, special consideration items
- Technical feasibility – waste generation and disposal
- Adverse effects of the cleanup activities
- Effectiveness and permanence



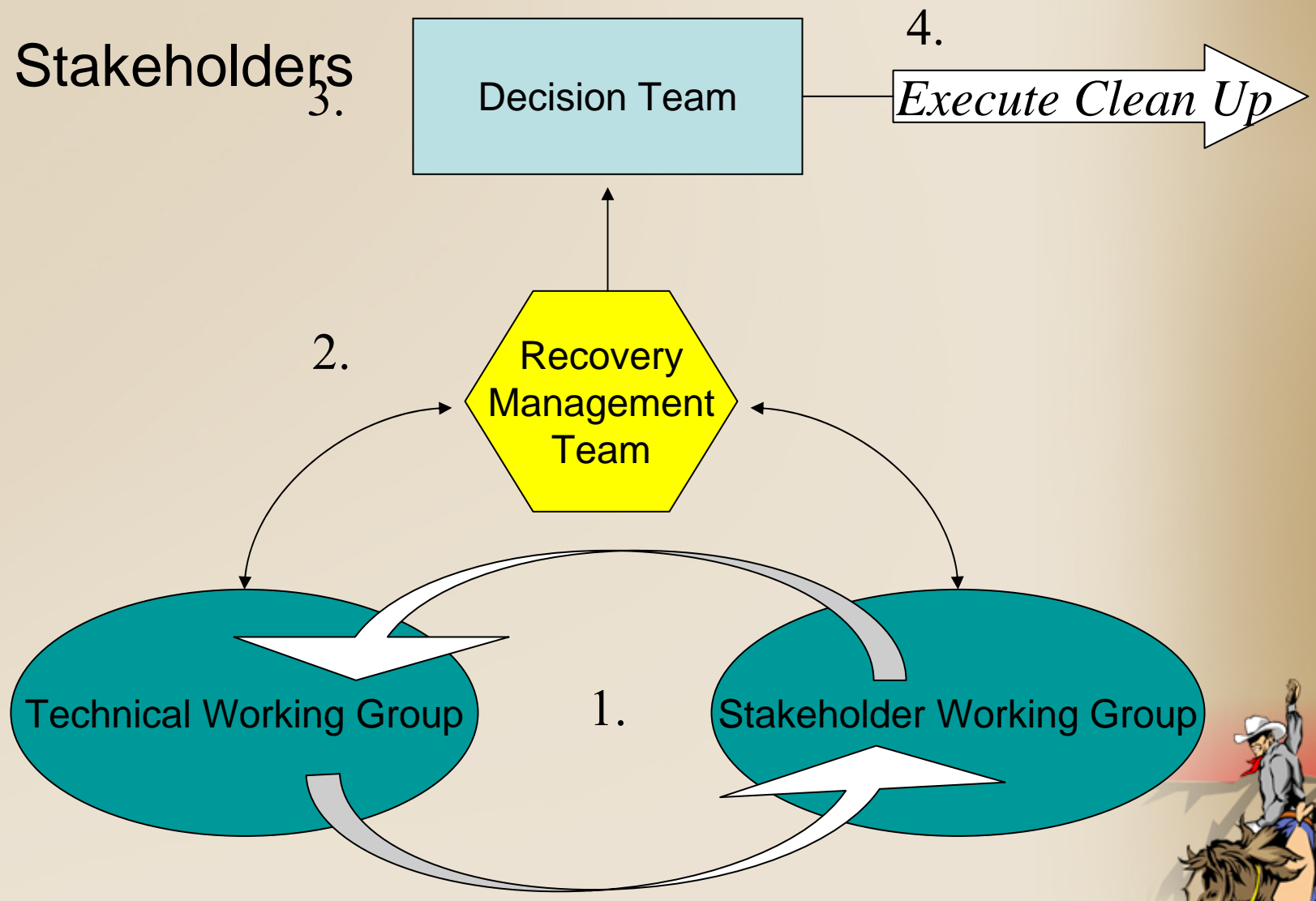
Teams in the Process

- Focus on process for reaching consensus:
Identify stakeholders in the decision making process:
 - Decision Team
 - Most senior federal and state officials
 - Recovery Management Team
 - Senior leadership in the field recovery effort
 - Stakeholder Working Group
 - Federal, state, local business, local non-governmental representatives
 - Technical Working Group
 - Select subject matter experts



EMERGENCY MANAGEMENT ROUNDUP

EXPECT THE UNEXPECTED



- Develop Operational Guidelines for specific activities
- Conduct cleanup activities per the plan
- Revisit and revise as conditions dictate, using the principle of the Framework



- In conclusion...



PAG Manual Revision Process

- Final draft for multi-agency consensus next month
- Announce draft for public comment June 2007
- Create a response-to-comments document
- Final and publish once DHS guidance is final



- Improved PAGs web page – with timeline
www.epa.gov/radiation/rert/pags.htm
- Four- hour workshops at two conferences (NREP and CRCPCD in April and May)
 - What PAGs do and don't do
 - Refresher on how to use the Manual
 - Feedback on updates and revision
- NFPA, IAFC, IAEM, others...



Questions and Comments

