U.S. DEPARTMENT OF ENERGY | OFFICE OF ENVIRONMENTAL MANAGEMENT

WIPP Town Hall Meeting

Sponsored by the U.S. Department of Energy
and the
City of Carlsbad, NM

September 3, 2015

Agenda

- Opening comments – Jay Jenkins
- Meeting moderator – Tim Runyon
- Update on WIPP activities – Dana Bryson
- Radiation presentation – Walter MacMillan
- Audience questions
  - In house
  - Internet
- Closing comments – Dana Bryson

Update on CBFO and WIPP Activities

Dana Bryson, Acting CBFO Manager

Interim Ventilation System

- Repaired fan/filter units have been received at the WIPP site
- Units will be installed on previously constructed concrete pads
- Power distribution center for system is scheduled for September
- Ductwork installation to begin before end of September

Supplemental Ventilation System

- Fan downloaded into the underground
- Installed in the S90 drift (air intake drift)
- Will increase the overall ventilation capacity in the underground

Ground Control Progress

- To date, more than **3,500 bolts** have been installed as part of the "catch-up" bolting activities

- Hybrid bolter is assembled and downloaded into the underground
- Preventative maintenance on the bolter's portable power center is in-process
- Upon completion of preventative maintenance, qualification of personnel on the hybrid bolter will commence

Annual Emergency Exercise

- WIPP will participate in its Annual Emergency Exercise this month
- Using a simulated event, this graded exercise provides an evaluation of WIPP's emergency response procedures and processes
- WIPP personnel will utilize the new WebEOC software for the exercise
- 16 outside agencies are scheduled to be involved in the exercise

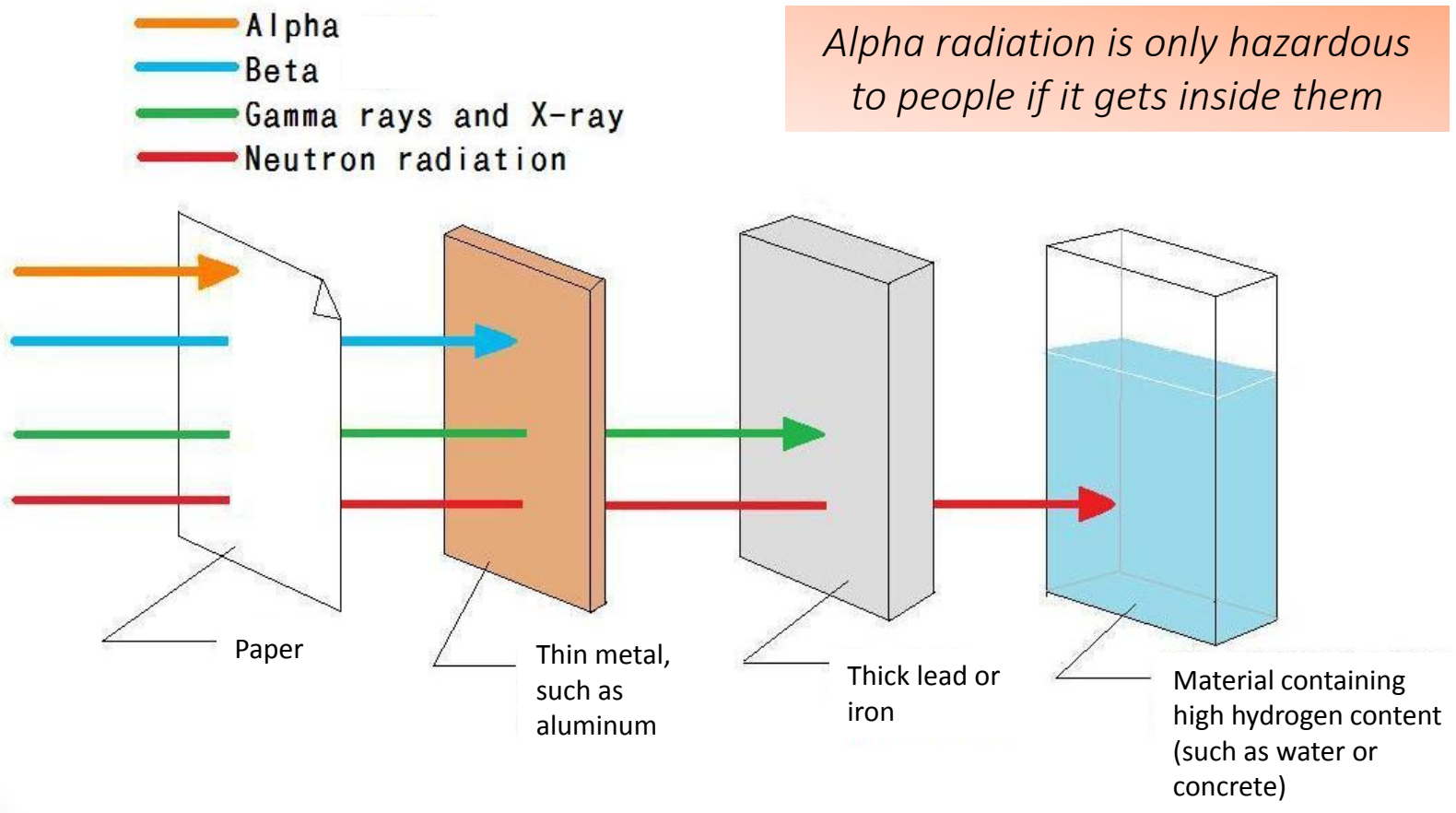
Walter MacMillan, NWP Radiological Controls and Dosimetry Manager

RADIATION PRESENTATION

What is Radiation?

- **Radiation** – a form of energy released from a radioactive atom.
- ***Ionizing*** radiation is produced by unstable atoms. Unstable atoms differ from stable atoms because unstable atoms have an excess of energy or mass (or both).
- Light, radio, and microwave are types of radiation called ***non-ionizing***.
- Four types of ionizing radiation include **alpha, beta, gamma and neutron**

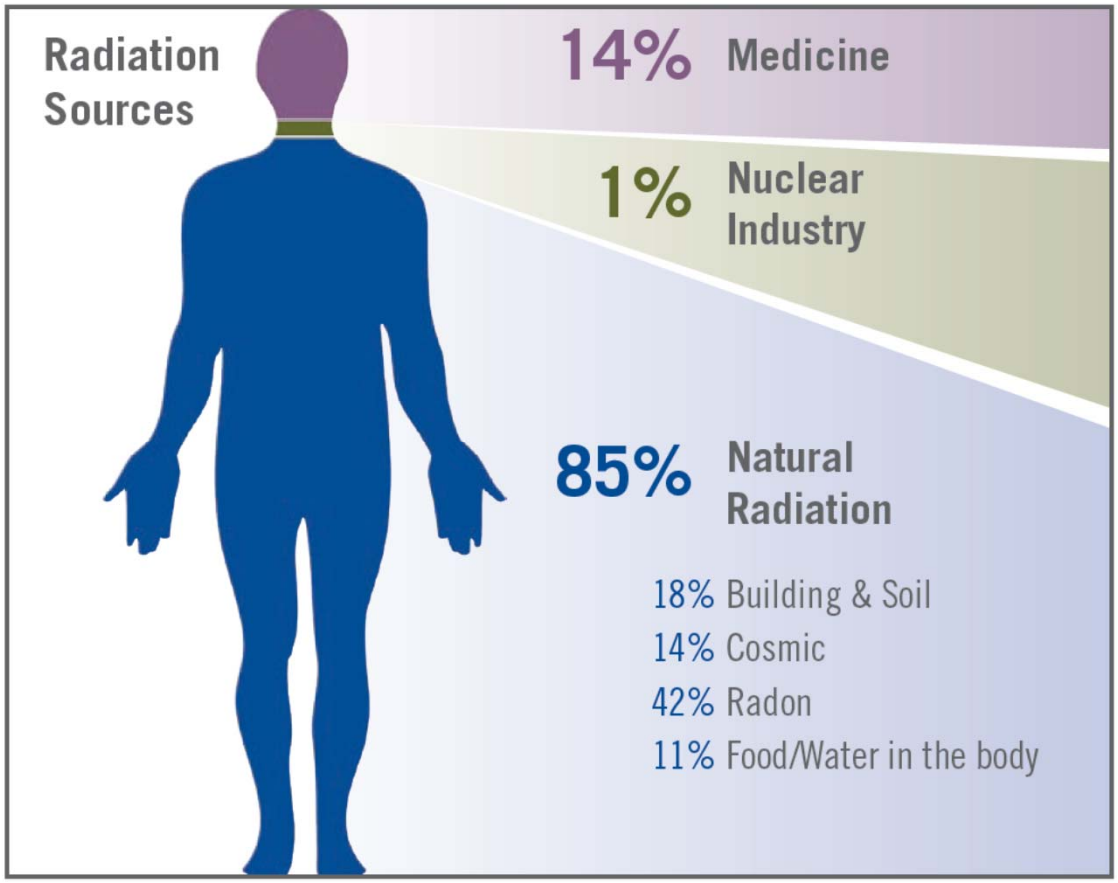
Relative Penetrating Power



Alpha radiation is only hazardous to people if it gets inside them

Background and Other Sources

"***Background***" or natural radiation everywhere in our environment. Background radiation comes from space (i.e., cosmic rays) and from naturally occurring radioactive materials contained in the earth and in living things.



Estimate your own background at http://www.ans.org/pi/resources/dosechart

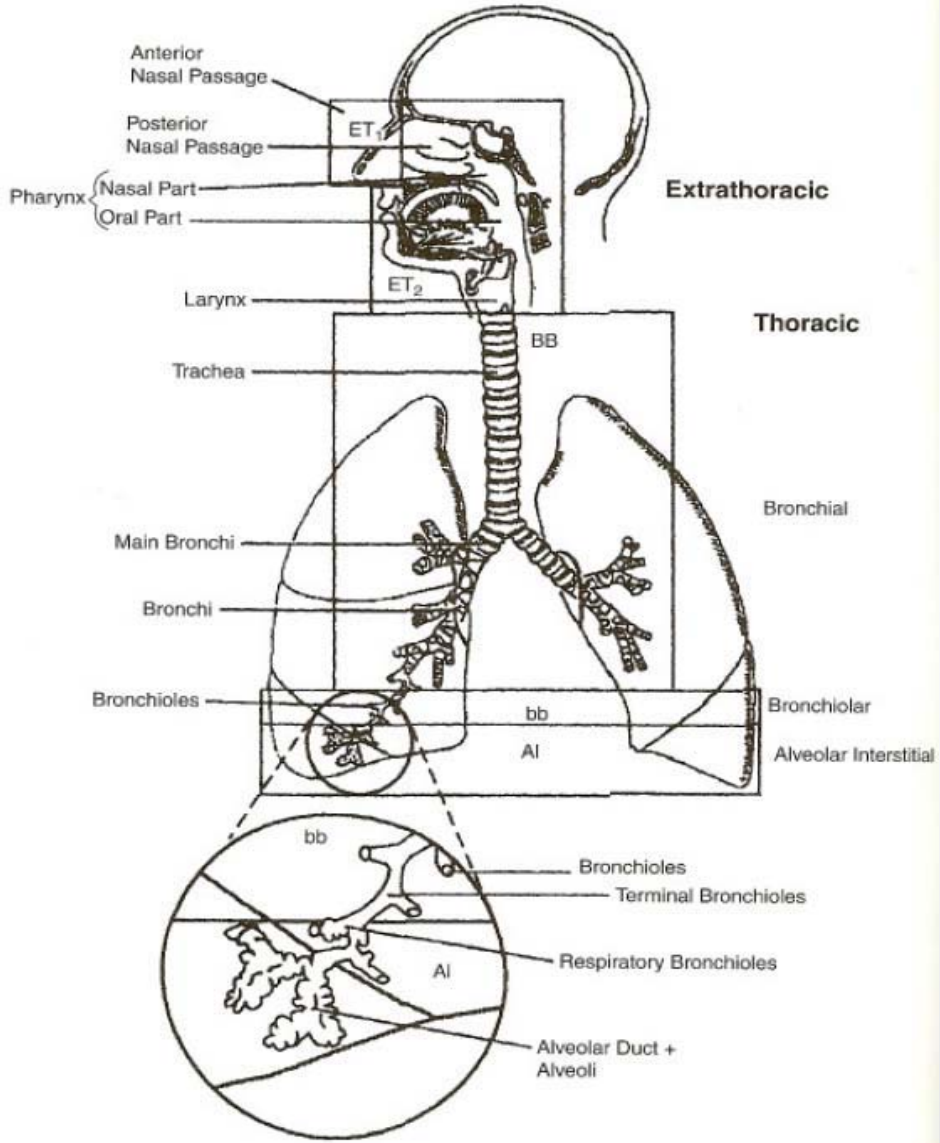
Exposure Pathways for Alpha Particles

Modes of Entry

- **Inhalation:** Materials enter the body in the air that is breathed.
- **Ingestion:** Materials enter the body through the mouth.
- **Absorption:** Material enters the body through intact skin.

Entry through wounds

- **Penetration:** Materials enter (passively) through existing wounds that were not adequately covered.
- **Injection:** Materials enter (forcefully) through wounds incurred on the job.



Protecting Employees

Personal Protective Equipment:

- Powered air purifying respirator
- Disposable booties, gloves and coveralls

Safety Management Programs also include:

- Training and job qualification
- Signs and warning barriers
- Job specific procedures
- Job Hazardous Analysis
- Work Control Authorization
- Dosimetry
- Shielding

Internal Dosimetry

- The WIPP internal dosimetry program consists of the following three major elements:
  1. Bioassay Monitoring
  2. Air Monitoring
  3. Evaluation Program
- Internal doses are never measured directly; instead, they are inferred from measurements of:
  a) Radionuclides in the body
  b) Radionuclides excreted from the body or
  c) The concentration or amounts of radionuclides in the work environment (workplace monitoring).
- The nature of the intake and excretion of radionuclides varies with the radionuclide, mode of intake, and chemical form.

WIPP workers have received no recordable radiation dose as a result of the recovery activities

Radiological Monitoring – Purpose and Scope

- Initial qualitative surveys and sampling performed to identify source and extent of contamination
- Additional quantitative surveys performed to determine personnel protection requirements and posting levels
- Ongoing radiological controls support is focused on risk remediation, contamination control, operations support and down-posting of contaminated areas

Instrumentation

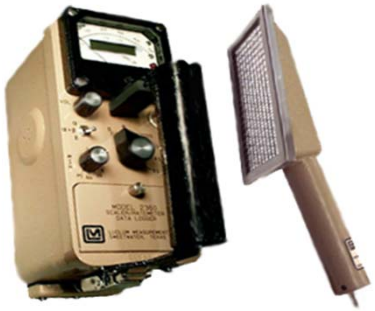
Continuous air monitor (CAM)

- ✓ Continuously sample the air for radioactive contamination in specific locations
- ✓ Air being sampled is either drawn through a moving particulate filter which is then monitored by a detector system or through an internal detector to directly identify radioactive materials present.
- ✓ A CAM can give both a visual and audible alarm to warn personnel of the presence of airborne contamination.

Instrumentation (cont.)

- **Direct instrument surveys**
  - Will detect removable as well as "fixed" surface contamination activity.
  - As a result, a direct survey must be combined with a "smear" survey to determine if the surface contamination present is removable or fixed.

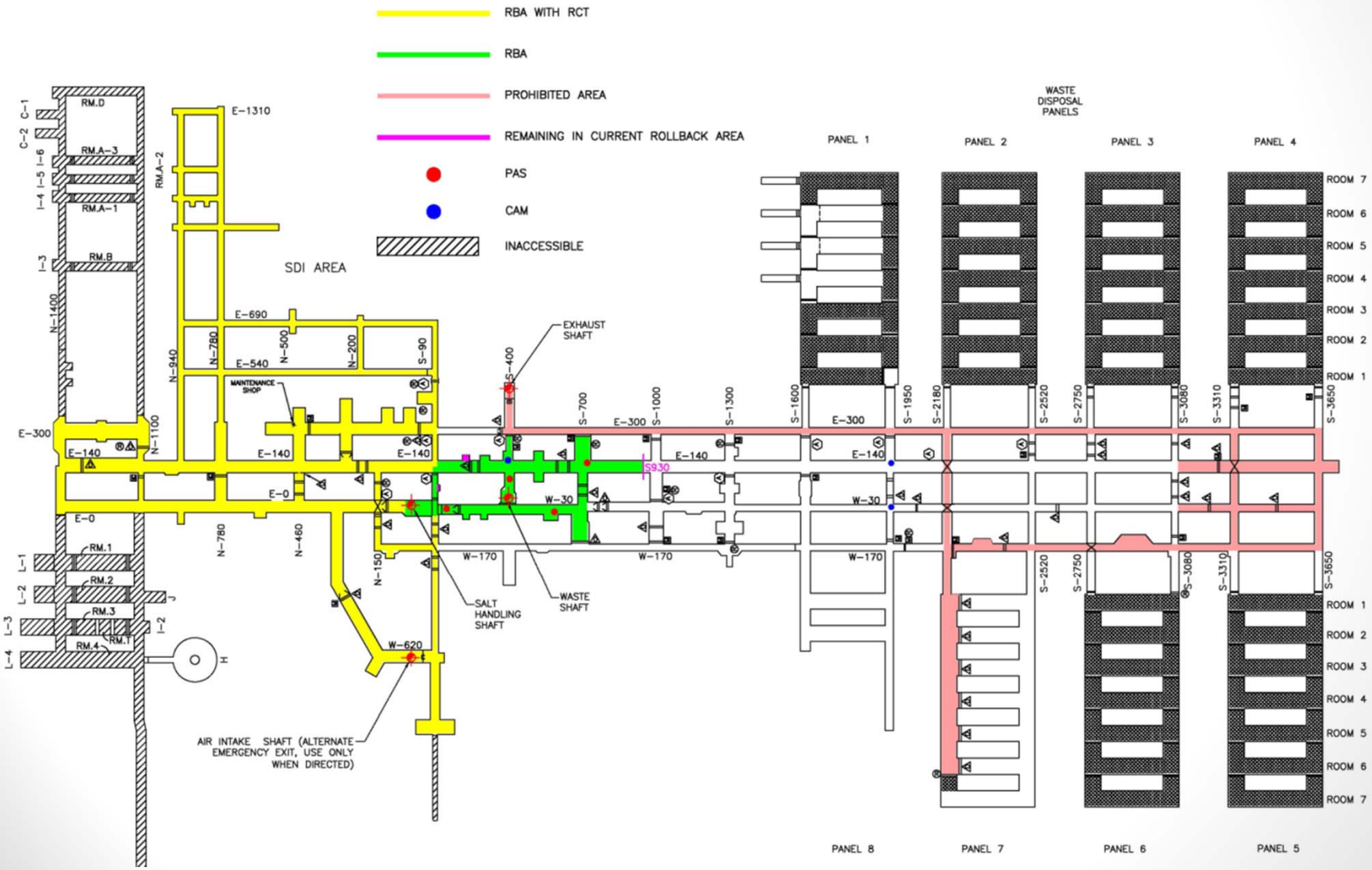
- **Smear surveys**
  - A disk smear is wiped over an area of 100 square centimeters and counted with proper instrumentation to determine the activity of the removable nuclides present.



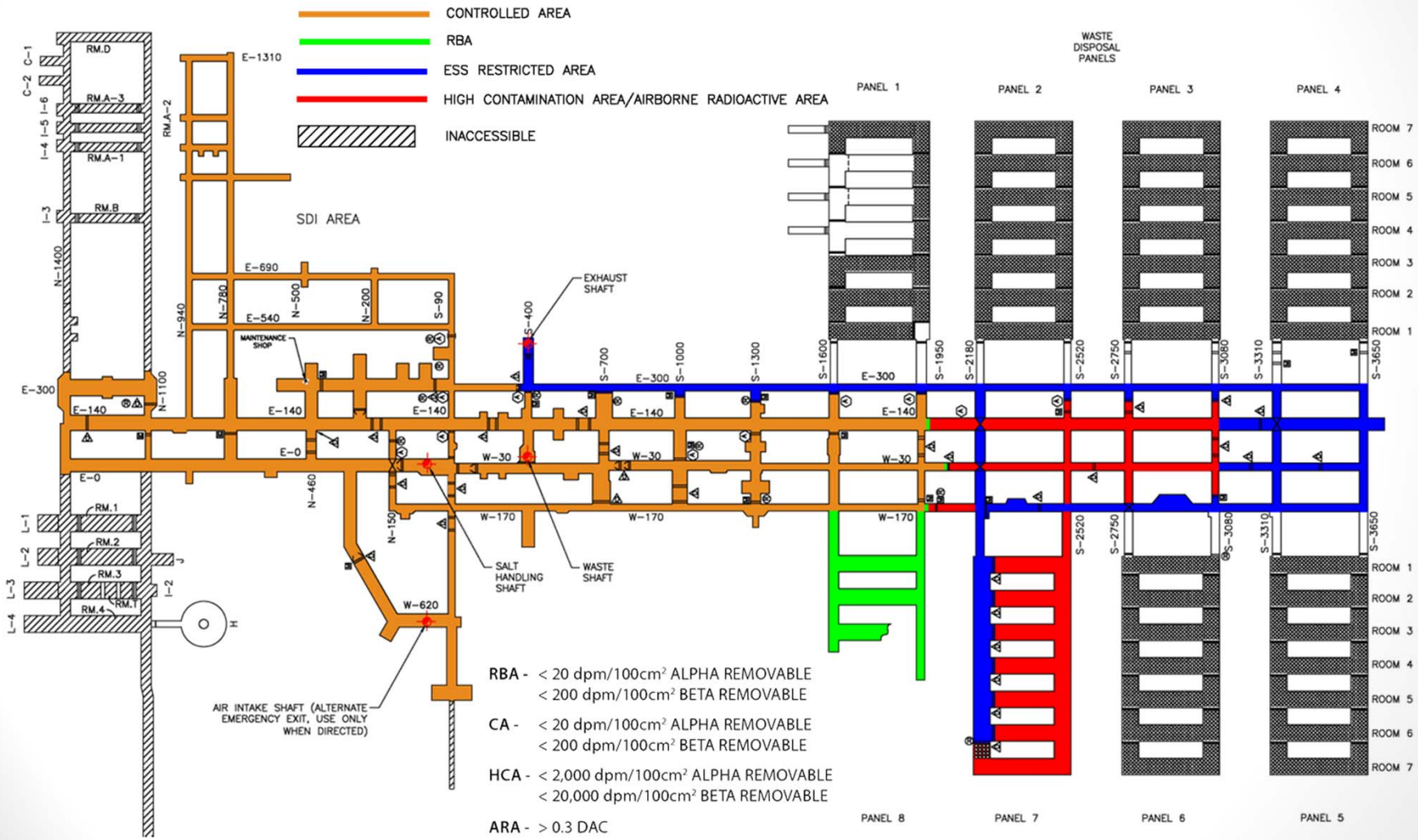
Posting Guidelines

- Controlled area
- Radiological buffer area (RBA)
- Contamination area (CA)
- High contamination (HCA)
- Airborne radioactivity area (ARA)

Survey Data: **July 2014**



Survey Data: **December 2014**



RBA - < 20 dpm/100cm² ALPHA REMOVABLE
< 200 dpm/100cm² BETA REMOVABLE

CA - < 20 dpm/100cm² ALPHA REMOVABLE
< 200 dpm/100cm² BETA REMOVABLE

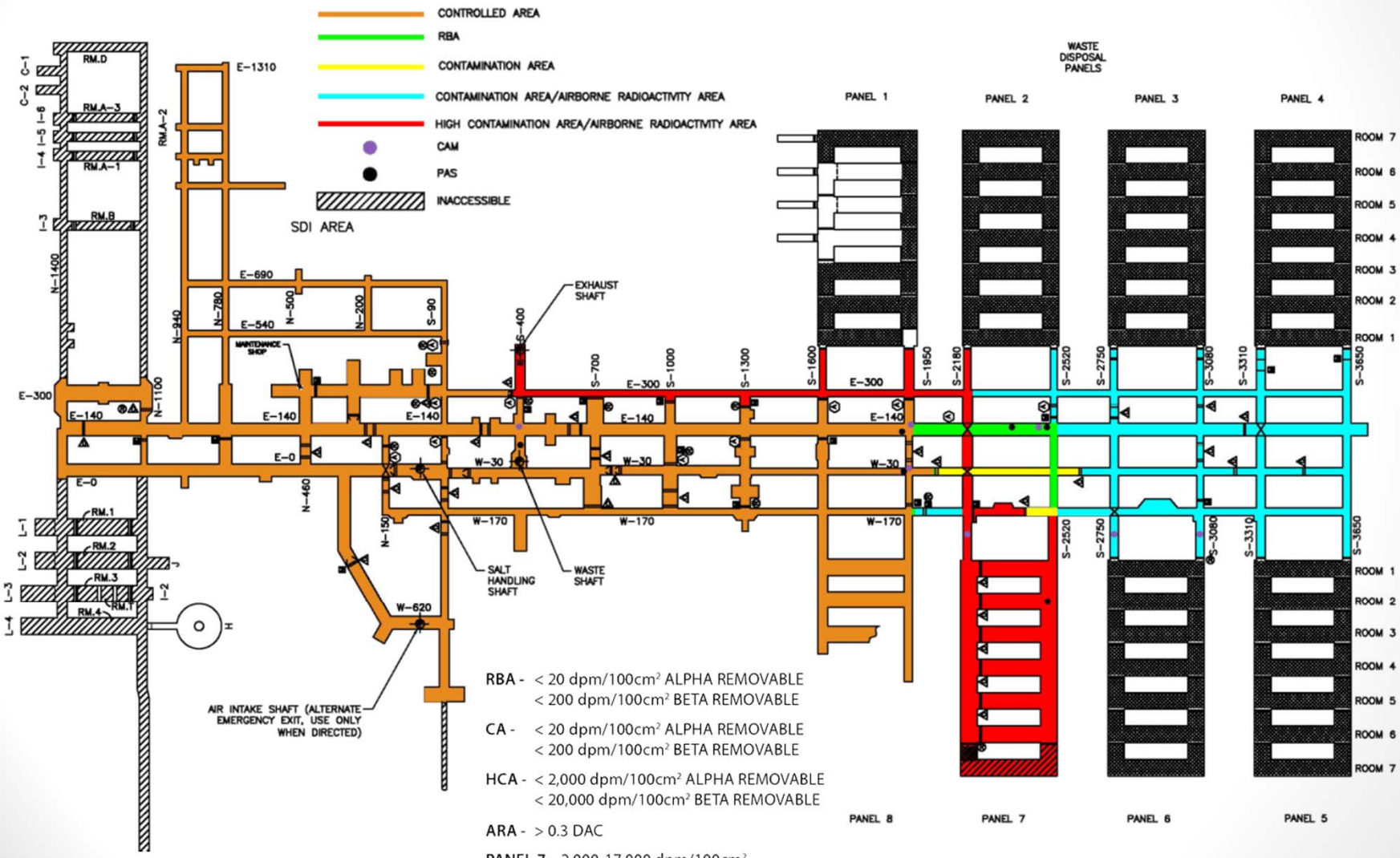
HCA - < 2,000 dpm/100cm² ALPHA REMOVABLE
< 20,000 dpm/100cm² BETA REMOVABLE

ARA - > 0.3 DAC

PANEL 7 - 2,000-17,000 dpm/100cm²

PANEL 7, ROOM 7 - > 1 million dpm/cm² ALPHA ON THE EXPOSED WASTE

Survey Data: **August 2015**



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Radiological Risk Reduction

- Continue to reduce CA/ARA footprint
- Continue to monitor and reduce risk to workers
- Support recovery activities

Questions & Answers