

New Mexico Environment Department

Waste Isolation Pilot Plant NMED Direct Penetrating Radiation Sampling Activities

DOE Town Hall Meeting Carlsbad, New Mexico Thursday, November 6, 2014



DOE Oversight Bureau Environmental Monitoring at WIPP and the Vicinity

- Exhaust Air, Stations A and B (Daily)
- Ambient Air (Bi-weekly)
- General Environmental (Annually)
 - Soil
 - Sediment
 - Surface water
 - Vegetation

• Direct Penetrating Radiation (Quarterly)

Direct Penetrating Radiation (Gamma Rays)

- Very High Frequency Electromagnetic Radiation of High Energy Photons (Similar to X-Rays)
- Without Charge or Mass
- Penetrating, Ionizing Radiation = Potential Biological Hazard
- Natural Sources: Cosmic (outer space), decay of naturally occurring radioactive isotopes eg. K-40 (soil, water, food) lightning strikes
- Man-made Sources: nuclear fission (nuclear reactors, nuclear explosions)



Typical Direct Penetrating Radiation Installation





Schematic of Electret Ion Chamber

(Fjeld et al 1994)



NMED DPR Sampling Locations (WIPP)



NMED DPR Sampling Locations (regional)



Direct Penetrating Radiation, CY 2006 Q-3 to CY 2014 Q-2



A Comparison of Quarterly Levels of Direct Penetrating Radiation (DPR) Sampled by NMED Q3 2006 to Q2 2014 (Vertical Lines indicate SD) 35 FF 30 F DPR (milirads) Ħ Æ ╓╋ H H 25 Ħ Ħ Ĥ 20 2006 2007 2008 2009 2010 2011 2012 2013 2014 15

Calendar Year Quarter

Literature Cited

Fjeld, R.A., Montague, K.J., Haapala, M.H., and Kotrappa, P., (1994) " Field Test Of Electret Ion Chambers For Environmental Monitoring" Health Physics 66:147-154.

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For more information

- NMED Rad Release Event Page
 - <u>http://www.nmenv.state.nm.us/NMED/Issues/WIPP</u> 2014.html
- NMED WIPP Permit Information Page
 - <u>http://www.nmenv.state.nm.us/wipp/</u>
- NMED DOE Oversight Bureau Page
 - <u>http://www.nmenv.state.nm.us/DOE_Oversight/</u>



Questions?

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