

“Radiation Measurement Experiences and Lessons to be Learned in Response to the Fukushima NPP Accident”

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From the perspective of a Health Physicist, specializing in radiation and radioactivity measurements, and who has responded to 3 major NPP accidents [TMI, Chernobyl, and now Fukushima], while all 3 of these accidents are different in origin, the radiation measurement needs on-site for the plant and workers, and off-site for the public and environment were remarkably similar.

The presenter was involved initially with the AREVA response for the first few months, and then for the past 2 years supporting the Canberra-Japan office technical response. Some of the radiation measurement projects with which the presenter has been involved and others that are still suggested for the future are highlighted in the presentation.

The following lists are radiation measurement recommendations that we concluded.

Things we can do better

- Environmental monitoring stations that are better for accidents, because accidents had most releases from un-monitored points.
- Iodine Thyroid measurement capability for large scale rapid deployment, easy for “untrained” operator
- Portable laboratories to take near to accident site, to research radiochemistry, radiation measurement, in-vivo and contamination.
- Rapid response to public fears to reduce public anxiety
- Accepted values on re-occupation of evacuation zone
 - Inform users of age-specific risk and how to minimize their radiation dose of evacuation zone
 - Give them tools that recording personnel dosimeter, area dose rate meter, food counter, routine in-vivo counts and health checks
- Make rad instruments easy for “untrained” people to use (Contamination monitors rather than hand-frisking)
- Reactor instrumentation that can survive accidents and reliably give the status of the core
- Gamma cameras that are practical which is light weight, wide dynamic range, and no off-axis false response.

- Internationally accepted and common standards for radioactivity in food and on export/import of products
- Better portable spectroscopy instruments that Easily configurable [automatic?] for “normal” and “accident” conditions
- Instruments ONLY for accident use will not be useful during accidents; best to design instruments for routine use that can also be used in accidents
- Minimize evacuations
 - ~600 people died from the trauma of the evacuation
 - Make KI available earlier to workers and population