

*Continuity of Commerce in the
Aftermath of Fukushima*

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Timeline

- First 3 – 4 weeks
 - Focus on the dead and missing
 - Making sense of the constantly changing conditions at Fukushima
 - Evacuation-related issues
 - Reaching the point where the radiation emergency was no longer on the front page



Timeline (continued)

- Month 2 post earthquake/tsunami (roughly)
 - People/companies start to move beyond the immediate tragedy
 - Start asking “What next?”



What Did The 'Starting Line' Look Like?

- No experience working with RAM
- No idea what type of regulatory environment exists related to radiation, but they did know this:
 - “RADIATION LEVELS ARE THOUSANDS OF TIMES GREATER THAN THE LIMITS”



The 'Starting Line' (continued)

- Japanese authorities apparently not protecting the public since NRC was pushing a larger evacuation zone
- A lifetime “most scientists agree that there’s no safe level of radiation”
- Recommendation not to use drinking water to mix formula
- Prohibition on some locally grown produce and seafood

And A Bit Further Down The Road

- US Navy vessel contamination in Pacific
- Fukushima radioactivity was being detected in the US (context?)



- Reports of buying the radiation pill world-wide (2002 revisited)

More Reactions

- Steady criticism of utility management, especially regarding communications



- And finally...IAEA accident rankings, or “JUST AS BAD AS CHERNOBYL”

U.S. Companies and the Questions Asked

- Industries
 - Electronics
 - Medical Devices
 - Shipping
- Offices in Japan
 - Are our employees safe?
 - What are the dose levels?
 - Should we close our offices?

U.S. Companies and the Questions Asked

- Importing product components or raw materials from Japan
 - Are receiving personnel at risk of becoming sick from radiation?



**STOP RADIATION
BEFORE IT STOPS YOU!**

- What are the relevant standards?
- What kind of meter should we get and what level do we use? How many milliSieverts per cpm?

Company Concerns

- “We cannot allow other employees to see receiving personnel performing radiation scans with chirping instruments.
- “We can’t have them taking pictures with their phones because they will end up on the internet.”
- At what radiation levels are our products dangerous to consumers?

Company Concerns (continued)

- “We need a statement making clear that our employees are not at risk as a result of the situation at Fukushima.”



What Kind of Project is This?

- Technical?
 - Scanning protocol
 - Compare readings to an action level
 - Basic contamination control recommendations
- Radiological risk communications?



Communications – From The General To The Specific

- Basic Radiation fundamentals
- The difference between contamination and dose
- An understanding of two important but very different issues
 - Worker Safety
 - Defend Product Integrity

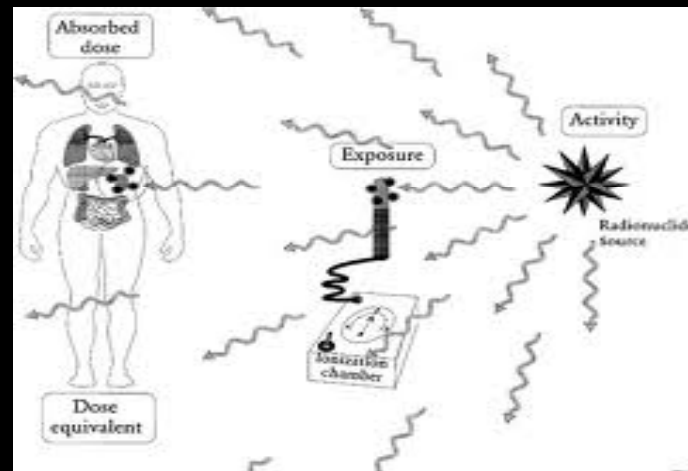
Some Challenges From This End



- Client perception re: implementing procedure
 - Set the limit
 - Turn meter on; it responds
 - It's either greater than the limit or its not
- The client needs training
- Program needs to be in place yesterday
- Instrumentation not immediately available

Challenges (continued)

- What are the relevant standards?
 - Dose limit to members of public
 - DOT/IATA for transportation – but a contaminated crate isn't a package of Class 7 RAM
- Traditional vs. SI units
- Activity/exposure/dose



Challenges (continued)

- Hard to train workers who speak Mandarin, if you don't speak Mandarin



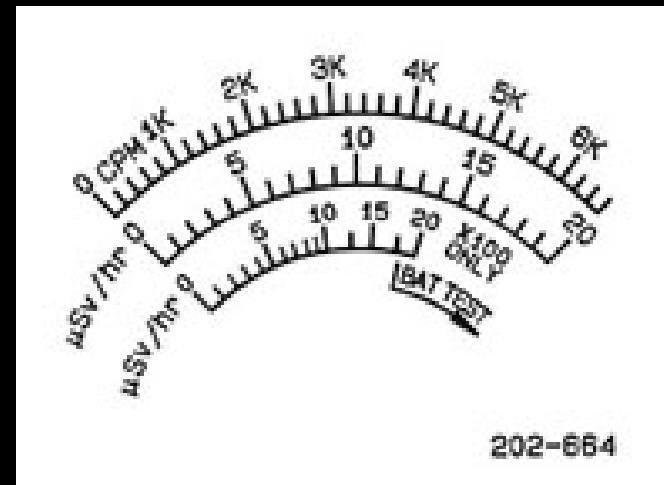
- Changing conditions on the ground make it hard to prepare client for 'what to expect'

Monitoring Protocol

- Objectives
 - Keep It Simple; then simplify a little more
 - Step by step instructions; include things like
 - QC check (battery and background; calibration)
 - Audio and F/S switch
 - Reset button
 - Basically assume zero working knowledge on part of end user

Monitoring Protocol (continued)

- Establish an action level (twice background-easier said than done)
- Meter face issues?
- Basics
 - Speed and pattern
 - Eyes vs. ears
 - When (and how) to collect dose rate readings
 - What to document



Monitoring Protocol (continued)



- If contaminated
 - Gloves
 - Covered surfaces
 - Basic radioactive waste instructions
 - CRAM labels
 - Notification
 - Access restriction
- Finished products – find the offending component
- Survey Forms and Diagrams

**Package Survey Form
(For Packages From Japan)**

Date: _____ Person performing survey: _____

General Information

Vendor: _____
Shipper: _____
Package description: _____
Package order # or purchase order #: _____

Survey Meter Data

Ratemeter serial number: _____ Calibration date: _____
Battery check: _____ Background (cpm): _____

Contamination Survey Result

Range of count rates observed (cpm): _____

Comments (description of any results exceeding two times background: _____

Dose Rate Survey (measurements taken with detector filter):

Background dose rate: _____ mrem/hr
Location: _____ Dose Rates (surface/@1m): ____/____ mrem/hr
_____ Dose Rates (surface/@1m): ____/____ mrem/hr
_____ Dose Rates (surface/@1m): ____/____ mrem/hr
_____ Dose Rates (surface/@1m): ____/____ mrem/hr

(Attach separate sheet as needed to report additional measurements)

Crate Status

Accepted: _____
Not Accepted: _____



Training



- In person training of EHS staff, or
- Webinar, or
- Video
 - Requested not more than 20 minutes
 - Demo alpha/beta/gamma
 - Show readings on various items
 - Close up on model 3; describe function
 - Look over survey form
 - Scan large case with sources

Video Feedback

- Too long – not told what they cut
- Non-HP trainers working with bilingual Chinese to translate into Mandarin
- cpm (video) vs. cps (meter face)
- “Got quite a reaction when you had that piece of uranium, everybody thought you were crazy. But it really helped with the safety concerns folks had...”



The Trend

- Panic has subsided with time
- Concern seems to be fading
- Subject to change, depending on what's in tomorrow's newspaper

