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Radiation Safety. **Amplified.**

Practical Considerations by the Nuclear Instrumentation Industry

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Obligatory Disclosure

1. These are my personal comments.
2. Neither my company nor my mother nor my wife has said they agree with them.
3. I have seriously attempted to have these comments represent the broad US nuclear instrumentation industry, not just Canberra or Mirion



Method used to gather Industry input

- ◆ A background document was generated and sent to 27 different companies.
 - ▶ 4 large instrument companies; all known to do significant international business
 - ▶ 13 smaller instrument companies; some with primarily a US market
 - ▶ 5 analytical service laboratories; primarily doing business in the US
 - ▶ 3 dosimetry service providers; primarily doing business in the US
 - ▶ 2 source manufacturers; one international, one primarily domestic
- ◆ The background document
 - ▶ Identified the goals of the workshop,
 - ▶ Identified some potential impacts of converting to SI units [good and bad]
 - ▶ Asked for comments about these impacts, and any additions
 - ▶ Asked for a numerical rating between 0 and 10
 - 0 = Please do it. The economic impact of this is well within the noise of other business issues we face. And this might even help our business by allowing us to reduce the number of products we support, and improve our international sales.
 - 10 = This will hurt us quite a bit economically. Changing to SI units will cost us more to implement than our average annual profit. OK – go higher than 10 if really expensive.



Digital Response Summary

- ◆ 4 large instrument companies
 - ▶ 0 0 50% response
- ◆ 13 smaller instrument companies
 - ▶ 0 4 10 23% response;
 - ▶ It is reasonable to assume that the others don't care, or they would have responded
- ◆ 5 analytical service laboratories; primarily US business
 - ▶ 0 8 40% response including 2 largest labs
 - ▶ My guess is that the other smaller labs will have a 5-10 score for their radiological business
- ◆ 3 dosimetry service providers; primarily US business
 - ▶ 0 2 4 100% response
- ◆ 2 source manufacturers; one larger international, one small primarily US business
 - ▶ 0 10 small business impacted most



Analog observations and comments – General + Instrument

- ◆ All companies in the nuclear business will have some short-term impact
 - ▶ Documentation: manuals, procedures, forms, product literature, customer training
 - ▶ Internal training: production, sales, and service people
 - ▶ Instruments for internal use, e.g. radiation safety or production: same issues as other licensees
 - ▶ Radioactive materials inventory – start keeping records in SI units
- ◆ Most products or services designed for a international customers probably have little to do
 - ▶ Advising customers how to change device to report in SI units
- ◆ Products which have separate US and SI versions have simple solution: sell/ship SI unit
- ◆ Products without an SI equivalent will need to be modified
 - ▶ But this might actually open up new international markets for them
- ◆ Responders request clear and firm advance notice [3-5y], with all the rules
 - ▶ True for both manufacturers and users
- ◆ Will existing non-SI instruments be allowed to be used, with local transcription to SI units ?
 - ▶ Not recommended; Many potential errors; Same issues as US Fukushima responders - multiplied
 - ▶ Note: this response given as an experienced Health Physicist, not as an instrument manufacturer



Analog observations and comments – Dosimetry, Labs, Sources

- ◆ Dosimetry companies:
 - ▶ Mostly conversion of report formats and old data to SI units on Form 5s
 - ▶ Proportionally more difficult for small companies than large ones
- ◆ Analytical Laboratories:
 - ▶ Instruments giving analytical results are probably already SI-compliant
 - ▶ Problem is customers – many different report formats due to many different regulatory drivers
 - NRC, DOE, DOT, NPP Tech Specs, States, OSHA, MSA, HUD, Military, FUSRAP, UMTRAP,
- ◆ Source Manufacturers:
 - ▶ Larger international company sees it as a benefit as it simplifies international shipments
 - ▶ Smaller company with only US business will have more work to come up with new labeling
 - ▶ Will there be a requirement to relabel previous sources with SI units ?



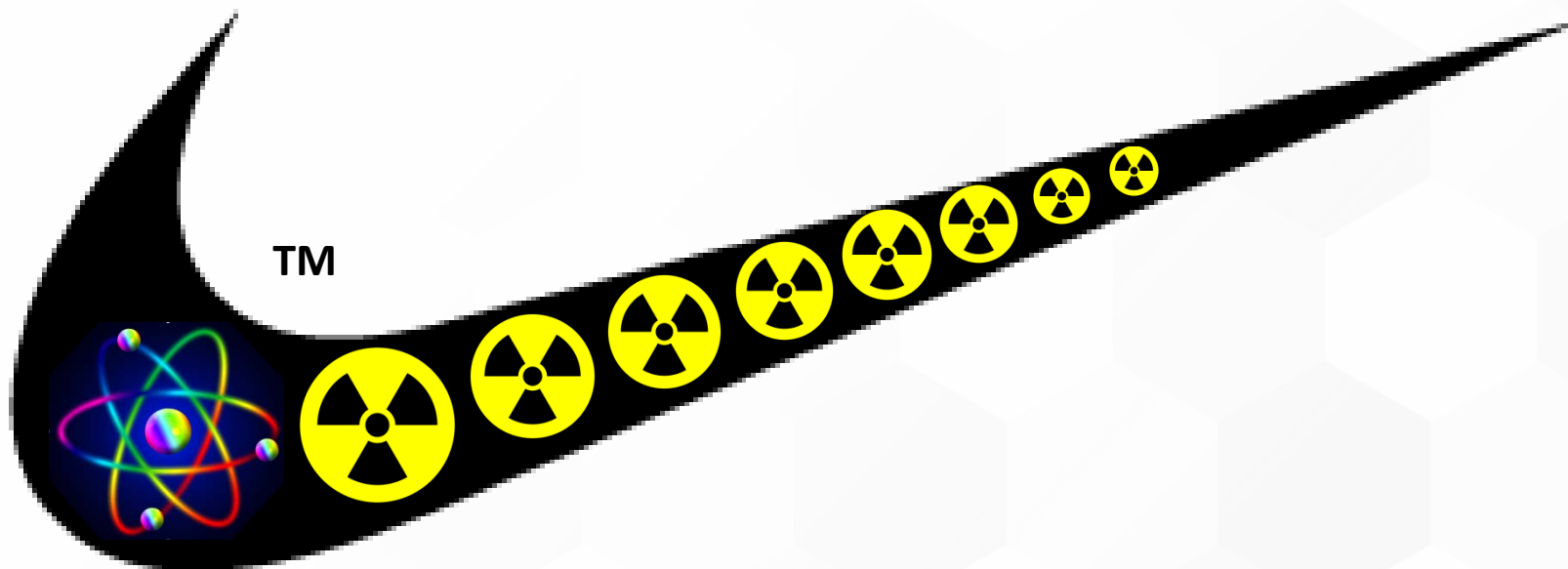
Items to be resolved if we move forward

- ◆ This Workshop is only on Radiological SI units. Will mixed units be allowed ? E.g. Bq/ft²
- ◆ What about WLM ?
- ◆ Labels on sources ? Will old labels still be acceptable ?
 - ▶ Don't want to encourage users to become "creative" and modify old sources with new labels
- ◆ Instruments – are old ones OK forever ? Not recommended.
 - ▶ What is the allowable overlap when both SI and non-SI instruments can be used ? 1y recommended
- ◆ Grants and other assistance should be made available
 - ▶ Grants to small mfg. companies that have primarily a US business
 - ▶ Grants to licensees – give a bounty for each non-SI instrument
 - Applied when traded in for a new SI-compliant one, or
 - Modified by the Original Manufacturer or Authorized Repair Facility to be SI-compliant.
 - ▶ Standardized general worker training modules; rad worker training modules;
 - Computer-based learning, drills or games to help us think in SI units, especially for us older folks



Conclusion

Just Do It



apologies to Nike