# **Radiogenics Working Group Report**

Jodi Cooley on behalf of the group

### Community Assays Database

- Overall, the database has been a success.
- Expect code to be finalized by end of 2014.



Community Material Assay Database

- Long term support issues:

- James Loach committed to maintaining code and small bug fixes.
- *Ian Lawson* and *SNOLAB* will be in charge of long term support of the project.
- The database will remain at Cloudant indefinitely with a mirror at SNOLAB.
- Decision to NOT include all legacy data, but only data that is currently relevant. *SMU* to support some of this work.
- Once code is finalized, ideally one person per collaboration/site will be in charge of data entry.

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### Facilities, Assays and Needs

- Proposal: Build a website/portal that lists available assay techniques at various locations. This would include descriptions of instruments and sensitivities.
  - Start with something basic. Perhaps add a scheduling ability in the future.
  - Any proposal for this site should include funding to hire a *professional* who would design the site and develop functionality. They would work in consultation with experts. *PNNL, USD*
- We think this fits well into a vision of how we might start to form the Consortium.

### Radon Abatement

- Radon plate-out and diffusion are topics of interest to the greater low-background community.
- A great deal of work has been done in the study of radon plate-out and radon diffusion. Studies point to environmental factors playing a large role. These should be studied in greater detail.
- *SMU* and *Syracuse* have some infrastructure, assay capabilities and a desire to pursue these studies.
- We recommend adding these studies to a future AARM proposal.

#### Cleaning/Handling/Counting Procedures

- The Consortium could host a series of workshops (2) with the goal to come up with recommendations of standard cleaning/ handling/counting procedures. *USD*, *PNNL* 
  - First workshop would review current procedures including data and lore. The goal of the workshop would be to identify "lore" and people or groups who would perform measurements to validate "lore".
    - This could include various analysis and preparation techniques for HPGe, ICP-MS, etc.
  - The second workshop would summarize work done and result in a written document/publication of recommended procedures.

## Radiogenic Calculations

- There is a serious concern about the recent licensing of SOURCES4C software. There was a strong consensus that the community needs a software package for these calculations which is open source and can easily be modified as more/better data becomes available.
- We recognize that this would be a serious undertaking and would require some considerations:
  - Need to make sure we have adequate support to write code, update libraries, benchmark code, etc. 1-2 postdocs + 1 student for 2 years.
  - Are the EMPIRE libraries proprietary to SOURCES? If so, calculations based on other libraries may not be as desirable.
  - Should we wait for the GEANT developers to include this in GEANT? Could be some benefit to doing it in parallel.
- Interest: USD, Alan Robinson, maybe SMU

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### Nuclear Cross-Sections

- Alpha-n cross-sections are not well known for several key materials: Cu, Ar, Ge and Cl. There is a community that makes these measurements. We should make connections to this community and encourage them to make these measurements.
- Alan Robinson and Anthony Villano know of people who have made or are making these sorts of measurements.

## Other Questions/Ideas

- From a simulation perspective, low energy detector response and energy scales need to be resolved.
- We know that there are angular corrections that should be made in neutrons from spontaneous fission, but we are not sure how large the effect.
- The consortium could send a monthly highlights email/ newletter (Maury Goodman style) which talks about recent news and development.

## What Didn't Make It

- We do not recommend a data base of spectra generated by SOURCES for sharing among AARM associates. Preference for code that can be shared and updated.
- Purification techniques for liquid nobles seemed too specific to experiments and we did not have an idea on how to add that to the consortium.
- New assay/screening detector development also seemed difficult to fit into the new consortium unless funds were available to develop a specific project.