**Ad hoc Meeting of Stakeholder States Involved with Technological Alternatives to High Activity Sources; June 6, 2016 IAEA**

Introduction :

* Second meeting of this ad hoc group; first mtg had 21 participants from 9 countries
* Goal : to promote the adoption of AT
* Noted that the intent is not meant to restrict the ability for MS to choose technologies (this point could be challenged based on some of the discussion, particularly where government is owner / operator of the equipment)
* This meeting had 31 participants (6 from US)from 14 countries ; and included representatives from ISSPA, iia, and IBA
* Latest Nuclear Security Summit provided a joint statement , signed by 28 countries regarding the strengthening of security of HARSS (high activity radioactive sealed sources). There are 3 key statements:

1. Strengthen the international framework of HARSS
2. Deepen international cooperation to manage HARSS at end of life
3. Support development of AT through research and cooperation

* This meeting is the first to focus on iii)
* Specific point made (and not sure if this is only because I was participating) highlighting the importance of sources and the need to ensure that it is clear that MS have a choice of technologies

State Level Actions and Perspectives :

* NNSA : Mission: to enhance global security by preventing HARSS from use in acts of terrorism.

: utilizes Protect (security systems/practices); Remove ; and Reduce (AT) activities in accomplishing its Mission

: working in over 80 countries now

: push AT where they do exist and push R & D development and understanding so that they can be considered

by users

: NNSA is NOT focused on other isotopic or lower activity sources

: NNSA sees AT existing for all applications except oil well logging (i.e. X-ray (and evolving UV) for blood

irradiation; E-beam, X-ray and LINAC for sterilization; LINAC for teletherapy; and X-ray for radiography

: considerations for replacement include : cost, reliability, user preference, information gaps, research standards

and operating protocols, technical differences between various technologies, and timeline (financing, source

disposition, manufacture and installation)

: Blood Irradiation (CIRP : Cesium Irradiator Replacement Program). Feb. 2015, NNSA established a pilot program

to provide incentives for voluntary conversion to X-ray (domestically this includes covering 50% of the cost of

conversion, paid following proof of source disposition). In 2016, coordinating some work (not detailed) with

American Red Cross. Target is to replace 34 Cs units with X-ray units by 2020 domestically.

: asked if NNSA was planning to conduct a risk comparison of sources vs. AT, NNSA indicated that they were not

but that is an area for future discussion.

* Norway : reviewed 3 surveys conducted surrounding X-ray use in hospitals; radiography and industrial gauges.

Government’s primary concern was Cs blood irradiators and they ordered a national replacement of ALL units

(took 3 years to accomplish). Healthcare is fully public so all costs borne by government. The statistical review

of the survey data in all cases was VERY liberally weighted in favour of AT, increasing level of concern and

potential further government involvement in other applications

* Finland : have ~6000 sources in registry (4000 Cs; 1000 Co; 11 Ir); 1555 X-ray units and increasing. Radiography: 370 X-ray units, 11 Ir sources and a few Co and Se sources. Ir and Co used when a greater dose is needed than can be achieved by X-ray. All radiotherapy is LINAC (instituted in 1970s and 1980s). All blood irradiators are Cs based due to 24 / 7 operational and reliability need. Government is encouraging X-ray and seeing some movement wrt blood irradiation application. Government is planning on requiring justification of any all new sources purchases as part of the rewrite of their Radiation Act. (*This is becoming a more common action amongst MS*)

Operator Implementation and Perspectives

* France : COFREND Program – focused on NDT and is source based since sources provide the best capability. Organization is a standards body – sets standards, certifies, uses and conducts research. Comparing Ultrasonic Testing with Radiation Testing, and have seen issues with UT related to geometric echoes and problems with evaluation of inconsistent welds. Will not try to standardize NDT for all possible applications, as validation of AT is experience based and takes 5+ years to complete.
* Malaysia : use sources for blood irradiation and brachytherapy, and LINAC for teletherapy. GTRI has been involved with them for many years with lots of focus on security controls and systems/culture. MOH pushing AT despite resistance from blood banks and processing organizations (users prefer Cs and its reliability and consistency and because of a bad experience in using X-ray). Malaysia requested NNSA ORS to consider whether they could provide them with an X-ray unit for trial and side by side comparisons and ORS indicated they would consider it and have further discussions. Recognized that there are very many questions to consider in potentially moving to AT and that it will take time, money, training, and resolution of user concerns.

Stakeholder Roles and Engagement

* Panelists were K. Hatcher (NNSA person at IAEA for 2 years); Ioanna Iliopulos (NTI); Guillaume Belot (ASN France); Paul Gray (ISSPA)
* A number of questions were posed to panelists regarding roles of NGOs with other parties; considerations in the movement to AT; ISSPA position with regulators, friend or foe; perspectives on incentives to move organizations to AT; individual positions regarding the move to AT
* A very strong push from NNSA and NTI for AT but agreed that industry should have the opportunity to determine the best technologies for them based on key criteria such as reliability, efficacy, efficiency, cost, maintenance and operating requirements (where government owned / funded, this may not be as clear). ISSPA key messages reiterated from other meetings re our industry breadth, strength, experience and the offer for ISSPA to be integrated into IAEA and MS initiatives ranging from development / modification of regulations to standards setting to participating in joint events to consider AT. One suggestion made by another panelist was to have IAEA host a meeting bringing together all players in sources vs AT including users, providers (of all technologies), regulators and IAEA. I agreed that this would be valuable but suggested that a number of industry (function or application-specific) meetings would provide greater value than having one massive meeting – thereby having detailed focus, and results / recommendations on each application.

IAEA Department of Nuclear Applications

* Reviewed Dept. structure and areas of focus. Noted significance of sources and broad and increasing applications. They are looking at a variety of AT applications, but indicated that both technical needs (efficacy, sustainability and reliability) and resources, expertise and infrastructure must be key considerations. IAEA supporting a broad range of Coordinated Research Projects (CRP) with AT to assess their capability and potential for future use. Speaker provided an unexpected endorsement of Co-60 for sterilization indicating that a technology so well proven and so broadly used is assumed to be the primary standard, therefore actions should be investigated as to how to effectively manage it (vs. mentioning anything about AT).

Recent Updates in AT

1. WINS : referenced the WINS Best Practice Guide on “Considerations for the Adoption of AT to Replace Radioactive Sources”. Suggested a) it is time to move from intent to implementation; b) AT needs to become part of Nuclear Technology in broadest sense and further, that radiation security needs to include AT; and c) IAEA incorporate AT into the NSS (Nuclear Security Series) documents since this will provide greatest exposure and push it can receive. The suggested next steps include :
2. Establish a focus on selected stakeholders and dedicate incentives to them specifically
3. Focus communications regarding AT towards RSOs and RPOs in organizations
4. Provide positive comments and success stories with conversion to AT on a broad scale
5. Assess needs and capabilities of AT through R & D
6. Carefully consider the cost-benefit and risk analysis of AT vs. sources
7. Center for Nonproliferation Studies: focused discussion on teletherapy and use of LINAC vs. Co and how it could be moved into a high need region like Africa. Suggested research by IAEA and others in producing LINACs that : can function in areas with regular power disruptions and air temperature control issues; have built in modules to alleviate maintenance issues; are able to self-diagnose problems; to increase training and education for users and operators; and to consider bulk purchasing programs to decrease costs, leasing programs and new funding models
8. Nuclear Threat Initiative : NTI’s Radiological Security Program objectives include a promotion of a US (and broader if possible) policy shift to phase out materials that could be used to make an RDD (dirty bomb), with focus on Cs, as well to strengthen security measures. NTI’s March 2016 Radiological Security Progress Report noted a desired outcome of accelerating the development and use of AT. This report is planned to be updated in anticipation of the December IAEA international conference. Concluding comments reiterated need to phase out Cs blood irradiators

Concluding remarks were very brief and indicated that all MS, regulators, and operators need to give specific consideration to moving to AT; that communication is critical amongst all parties involved; and that this is an area of critical focus

A closed meeting was then held, to which I was not invited, and its focus was to develop next steps and plans for moving forward.

I asked if we could receive a copy of the minutes, even if only for the majority of the meeting in which we participated. This was discussed in the closed meeting and it was agreed that a copy would be provided. This will be made available in 2 -3 weeks once completed by the Committee, and will be circulated by me at that time.

**MY CONCLUSION** : This meeting provides a very clear view of the massive resources, and the broad organizations (MS, NGOs like NTI and WINS, regulators, producers of AT, and even the IAEA) that are being used to focus on the transition from HARSS to alternative technologies. Further, sponsors of this work such as Ted Turner, and numerous celebrities and politicians on a global basis , show that it is extremely well funded with access not only to monetary but significant other resources. We need to maintain our focus - both from an Association perspective as well as an individual company / industry perspective.

Paul