

IAEA Regional
Cooperative Agreement
RAS/9/042: Sustainability of
Regional Radiation Protection
Infrastructure



**Regional Seminar of Radiation Protection Regulators:
SHARING BEST PRACTICES IN
MANAGING DISUSED SOURCES AND NETWORKING
December 7-11, 2009, Menara Peninsula Hotel,
Jakarta, Indonesia**

SEMINAR REPORT

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1. INTRODUCTION

The International Atomic Energy Agency (IAEA) in cooperation with the Government of Indonesia through the Nuclear Energy Regulatory Agency, BAPETEN, organized the meeting at the Menara Peninsula Hotel in Jakarta, Indonesia from December 7 – 11, 2009. The Meeting Director was Ms. Suryawati, Head, Centre of Regulatory Systems and Technology Assessment for Radiation Facilities and Radioactive Materials, BAPETEN.

The purpose of the seminar was to allow the participants to come together in a forum where they might be able to share best practices about the management of disused radioactive sources. The agenda for the week was designed to provide an opportunity for the participants to network about their experiences and national regulatory programmes in an informal manner.

The IAEA provided the services of three experts to the meeting: Mr. Zhiwen Fan of the China Institute for Radiation Protection, Mr. Robert Irwin of the Canadian Nuclear Safety Commission (retired), and Mr. Anthony Wrixon of the International Atomic Energy Agency (retired).

Twenty-one participants attended the regional seminar from thirteen countries: Bangladesh, China, India, Indonesia, Japan, Malaysia, Myanmar, Pakistan, Philippines, the Republic of Korea, Sri Lanka, Thailand, and Vietnam. Indonesia sent additional observers.

2. SEMINAR

Mr. A. N. Lasman, Chairman of BAPETEN opened the seminar with a welcoming address on Monday morning. Mr. Wrixon welcomed the participants on behalf of the IAEA and made introductory remarks. The coordinator of the Regional Co-operative Agreement (RCA), Dr. Sakai, from Japan, also welcomed those attending the seminar.

IAEA experts and staff from BAPETEN and BATAN, the Indonesian National Nuclear Energy Agency gave the presentations on Monday, Day 1. Mr. R. Alamsyah of BAPETEN chaired the session. Mr. Wrixon gave presentations about the IAEA standards and other guidance for the safety of radioactive sources and about the IAEA Code of Conduct for the Safety and Security of Radioactive Sources and its implementation with regard to long-term strategies for the management of disused sources. Mr. Irwin gave a

presentation about the IAEA's approach to the safety of disused sealed radioactive sources and about the Canadian experience in managing disused sources. Mr. Fan spoke about developing a national policy and strategy for the long-term management of disused sealed radioactive sources. In addition, Mr. M. Sinaga of BAPETEN gave a regulatory overview about disused sources and Mr. D. Wisnubroto of BATAN, the National Nuclear Energy Agency; spoke about centralized storage for disused and spent sources in Indonesia.

Day 2 and Day 3 of the seminar were devoted to country presentations. Day 4 was devoted to working groups and Day 5 to the final seminar report and wrap-up.

On the morning of Day 3, the participants made a technical visit to the Radioactive Waste Development Centre at Serpong Town that is operated by BATAN. Mr. Wisnubroto of BATAN gave a lecture about radioactive waste treatment at the facility and participants then toured the waste conditioning, cementation and interim radioactive waste storage areas.

The agenda for the weeklong seminar is attached as Appendix 1.

3. COUNTRY PRESENTATIONS

Participants from each country gave their presentations in two sessions on Day 2 and in the afternoon of Day 3. A rapporteur was appointed for each session to record and summarize the highlights of each presentation. The reports of the rapporteurs are attached as Appendices 2, 3 and 4.

Prior to the meeting, the IAEA provided a template for the country presentations to all participants. The template was very useful to allow the participants to compare, in a consistent fashion, their national approaches to the management of disused sources. The suggestion to use SWOT (strengths, weaknesses, opportunities and threats) analysis was particularly helpful.

4. WORKING GROUPS

During the country presentations, the IAEA experts compiled a list of issues that, with additional comment from the RCA Coordinator and BAPETEN staff, were then used as the basis for working group discussions on Day Four. In total, some twenty issues were identified and these were divided according

to four issue areas: transport related issues, policy and strategy issues, management system issues and technical issues. Four additional issues common to all working groups were also identified. The list of issues for the working group discussions is attached as Appendix 5.

The working groups were asked to share best practices in managing disused sources and to discuss how networking in RCA countries might help to address the issues.

The four working groups for Day 4 were made up of participants from the following countries:

Transport-Related Issues: India, Pakistan, Bangladesh, Korea and Vietnam

Management System Issues: Japan, Korea, Indonesia, India, Philippines and Thailand

Policy and Strategy Issues: Indonesia, Pakistan, Bangladesh, China, Sri Lanka and Vietnam

Technical Issues: China, Thailand, Malaysia and Myanmar

Each working group was asked to appoint a chair and a rapporteur. The working groups were asked to prepare brief presentations summarizing their discussions for presentation in a plenary session at the end of Day 4. The working groups were further asked to draft a short account of possible solutions to the issues assigned to them to discuss for inclusion in the seminar report.

The reports of the four working groups are attached as Appendices 6, 7, 8 and 9.

5. REVIEW OF WORKING GROUP REPORTS

On the morning of Day 5, the IAEA experts, the coordinator of the Regional Co-operative Agreement and the chairs of the working groups reviewed each of the reports with the objective of identifying key recommendations pertaining to the various issues discussed on Day 4. These key recommendations were then presented in a plenary session for discussion and comment. The key recommendations follow.

6. KEY RECOMMENDATIONS

(Note that some of the recommendations have been edited for clarity)

6.1 Policy & Strategy Issues

- States should establish a policy & strategy covering disused sources including:
 - Derivative regulations to govern the management of disused sources. They should be dealt with on the basis of priorities
 - Funding of facilities and equipment is needed to repatriate sources
 - The need for a centralized storage facility
- Governments should establish a trade facilitation system to expedite import/export processes
- States without nuclear power programmes should consider using borehole disposal for disused sources
- Public information programmes using a wide variety of media including seminars for police, customs, border security, are important to strengthen the control of disused sources.

6.2 Transport Issues

- The Action Plan for denial of shipments as adopted at the meeting in Beijing in 2008 needs to be followed up
- As far as possible the transport of disused sources should be in compliance with the Transport Regulations.
- Security during transport of radioactive material needs to be ensured as per IAEA Guidelines
- The practice of preserving the original transport containers should be adopted
- States should explore the possibility of sharing transport containers

6.3 Management System Issues

- The regulatory body(RB) should prepare annually a revised education and training programme for users, customs and police forces

- RBs should establish a regulatory information system to make the RB aware of which licensees have disused sources
- RBs should include in the licence a specific condition related to disused source management
- There is a need to make arrangements for supplier countries to take back sources in the event of bankruptcy of the source supplier/manufacturer

6.4 *Technical Issues*

- Radioactive sources should be given an ID number so that these sources can be monitored using appropriate software
- Knowledge of disused sources should be given periodically to the public through media campaigns
- Licensees should be encouraged to reuse sources – financial incentives or other incentives might be devised and implemented
- An appropriately equipped central storage facility should be established in each country
- An independent third party should be established to monitor and certify scrap metal. The national authority (usually the RB) or some international accrediting body should accredit this body.

7. CLOSING THE SEMINAR

Dr. Sakai, the coordinator of the Regional Co-operative Agreement made a brief presentation about the importance of maintaining networking within the region using a networking model that is attached as Appendix 10. Mr. Wrixon offered closing remarks and thanks on behalf of the IAEA and the three IAEA experts. Dr. Khoirul Huda, Deputy Chairman of BAPETEN, then thanked the seminar Organizing Committee and the IAEA and the participants and closed the regional seminar.

8. SEMINAR FEEDBACK

The participants were asked to provide comments and feedback about the seminar. Their responses about the seminar, its organization, the facilities and their comments are summarized in Appendix 11.

9. CONCLUSIONS

All participants agreed that the BAPETEN seminar organizing committee did a superb job. Meeting facilities and equipment and the technical support from BAPETEN staff were excellent. The participants all remarked on the warmth and hospitality of their Indonesian hosts.

The participants at the meeting enjoyed listening to how other countries in the region manage their disused sources and the IAEA's suggestion to use a standard template for the presentations facilitated the comparison of country programmes.

As the country presentations proceeded, it became apparent that there were a number of common issues that might usefully be discussed in greater depth. As these issues were identified, they were grouped in such a fashion that they might be dealt with by the four working groups. By presenting the list of issues to the participants on Day 3, they then had the opportunity to review the issues prior to the beginning of discussions on Day 4. The issues themselves and the composition of the working groups were determined by the IAEA experts mostly for reasons of efficiency, however, had time permitted, it might have been preferable to have more discussion of the issues and the issue priorities and to have the composition of the groups determined by the participants themselves.

The visit to the Radioactive Waste Management Facility operated by BATAN (National Nuclear Energy Agency) at Serpong town and the opportunity to see the interim disused source storage facility was appreciated by all. The chance to see such a facility was particularly helpful for those participants who do not yet have national source storage facilities in their own countries.

There were many good practices described in the country presentations, but it was also apparent that the status of the management of disused sources varies from country to country. Much more work needs to be done to strengthen the management of disused sources in the region. To this end, the continuation of networking in the region is essential.

10. SEMINAR PARTICIPANTS

A list of the names and addresses of the seminar participants is attached as Appendix 12.

Appendix 1

AGENDA

DAY 1 : Monday, 7 December		
08:30 – 09:00	Registration	
09:00 – 09:30	Introductory session	
09:00 – 09:10	Welcome address from BAPETEN	A. N. Lasman Chairman of BAPETEN
09:10 – 09:20	Welcome address on behalf of IAEA	A. Wrixon
09:20 – 09:30	Welcome address from the RAS 9042 Project leader	K. Sakai (NIRS)
09:30 – 12:00	Session 1, Chair: R. Alamsyah International Recommendations and Requirements	
09:30 – 10:00	IAEA Standards and other guidance for the Safety of Radioactive Sources	A. Wrixon
10:00 – 10:30	<i>Tea – coffee break</i>	
10:30 – 11:00	The IAEA's approach to the Safety of Disused Sealed Radioactive Sources	B. Irwin
11:00 – 12:00	Code of Conduct on the Safety and Security of Radioactive Sources and its implementation with regard to Long Term Strategies for the Management of Sealed Sources	A. Wrixon
12:00 – 12:30	Questions – Discussion	
13:00 – 14:00	<i>Lunch break</i>	
14:00 – 17:00	Session 2, Chair: A. Wrixon Existing Experience	
14:00 – 14:30	Regulatory Overview on Disused Source	M. Sinaga BAPETEN
14:30 – 15:00	The Canadian experience on Managing Disused Sources	B. Irwin
15:00 – 15:30	<i>Tea – coffee break</i>	
15:30 – 16:00	Centralized Storage for Disused/Spent Radiation Sources in Indonesia	D. Wisnubroto BATAN
16:00 – 16:30	Developing a national policy and strategy for the long term management of disused sealed radioactive sources.	Z. Fan
16:30 – 17:00	Questions – discussion	
17:00	End of the Day 1	
18:30 – 20:30	Courtesy dinner at Pulo Dua Restaurant	

DAY 2 : Tuesday , 8 December		
08:30 – 12:00	Session 3a, Chair: B. Irwin Country Presentations	
08:30 – 09:00	Country Presentation: Bangladesh	
09:00 – 09:30	Country Presentation: China	
09:30 – 10:00	Country Presentation: India	
10:00 – 10:30	<i>Tea – coffee break</i>	
10:30 – 11:00	Country Presentation: Indonesia	
11:00 – 11:30	Country Presentation: Japan	
11:30 – 12:00	Country Presentation: Summary	Rapporteur
12:00 – 13:30	<i>Lunch break</i>	
13:30 – 17:00	Session 3b, Chair: A. Wrixon Country Presentations	
13:30 – 14:00	Country Presentation: Korea	
14:00 – 14:30	Country Presentation: Myanmar	
14:30 – 15:00	Country Presentation: Pakistan	
15:00 – 15:30	<i>Tea – coffee break</i>	
15:30 – 16:00	Country Presentation: Philippines	
16:00 – 16:30	Country Presentation: Sri Lanka	
16:30 – 17:00	Country Presentation: Summary	Reporteur
17:00	End of the Day 2	

DAY 3 : Wednesday, 9 December		
08:00 – 14:00	Technical Visit to Radioactive Waste Management Facility, operated by BATAN (National Nuclear Energy Agency)	Serpong town
08:00-09:30	Leave the hotel to Serpong	
09:30-09:45	Coffee break/refreshment	
09:45-11:45	Site visit	
11:45-12:15	Lunch	
12:30-14:00	Return to the hotel	
14:00 – 14:30	<i>Tea – coffee break</i>	
14:30 – 17:00	Session 3c, Chair: Z. Fan Countries Presentations	
14:30 – 15:00	Country Presentation: Thailand	
15:30 – 16:00	Country Presentation: Vietnam	
16:00 – 16:30	Country Presentation: India	
16:30 – 17:00	Country Presentation: Summary	Rapporteur
17:00	End of the Day 3	

DAY 4 : Thursday, 10 December		
08:30 – 09:00	Summary of Country Presentations	B. Irwin
09:00 – 12:00	Section 4a: Working Groups	
09:00 – 09:30	Introduction to working groups	A. Wrixon
09:30 – 12:00	Working Groups	
12:00 – 13:30	Lunch break	
13:30 – 15:30	Working Groups (cont'd)	
15:30 – 16:00	Tea – coffee break	
16:00 – 17:30	Session 4b, Chair: A. Wrixon Working Groups Recommendations	
16:00 – 17:00	Reports from the working groups	Rapporteurs
17: 00	End of the Day 4	
	Preparation of the Meeting Report	Experts

DAY 5 : Friday 11 December		
08:30 – 10:00	Section 5, Chair : Suryawati	
08:30 – 10:00	Review and discussion of the meeting reports	B. Irwin
10:00 – 10:30	Tea – coffee break	
10:30 – 11:00	Endorsement of the meeting report	
11:00 – 11:45	Closing remarks	A. Wrixon (on behalf of IAEA)
		Suryawati (on behalf of OC)
		Deputy Chairman of BAPETEN (Closing of the Workshop)
11:45 – 13:30	Lunch break	

Appendix 2

Summary of Country Presentations Made on Dec 8 - Session 3a (Rapporteur: T. Artificio)

Presenters:

1. Bangladesh
2. China
3. India
4. Indonesia
5. Japan

Highlights:

1. The monitoring of scrap metals, reuse and recycling of sources in China are covered by the Law on Prevention of Radioactive Pollution.
2. Reuse and recycling of sources in India are encouraged only among suppliers.
3. Interdepartments networking and data exchange in Indonesia is done through a national trade facilitation system.
4. China has two (2) near surface disposal facilities but disused sources have not been accepted in these facilities.
5. Coordination with concerned government agencies, shipping line companies, cargo handlers and pilot federations has been done in Indonesia.
6. An association in Japan, i.e, the Japan Radioisotope Association collects and receives orphan sources for temporary storage.
7. The disposal facilities for disused sources in Japan are still under consideration.
8. Transporting disused sources in Bangladesh from user premises to Central Radioactive Waste processing Unit is escorted by the police, fire fighting department, and a medical team depending on the source activity.
9. India requires a certificate of "radioactive contamination free" in the scrap metal to be imported, issued by the regulatory body or agency accredited by the regulatory body from the country of origin.
10. Many awareness programs with regard to detection of orphan sources have been conducted with concerned agencies in India.
11. In China, every radioactive source has an ID number.

Issues that should be addressed during the seminar as gathered from the presentations include:

1. Non availability of standard transport containers
2. Bankruptcy of the company using the radioactive source
3. Delay and denial of shipment
4. Coordination among the regulatory body, user and disposal agency/institution
5. Damaged sources
6. Cost of disposal and export of disused sources
7. Identification of sources
8. Problems on waste packaging
9. Development of national waste inventory and registry
10. Certificate for scraps/international program that would incorporate methodology to determine that scraps are not contaminated
11. Training of people undertaking activities involving orphan and disused sources
12. Designing, implementing, and analyzing a comprehensive national action plan for radioactive waste management to meet the national policies and needs

Appendix 3

Summary of Country Presentations Made on Dec 8 - Session 3b

(Rapporteur: Mr. R. K. Singh Khaidem)

1. Country: Rep of Korea

Presented by: Mr. Bok Hyaung Lee, KINS

Main Points: Good regulatory Infrastructure, specific license for impact of sources by supplies and periodic reports to Atomic Energy Authority.

No separate permission for import to users

Temporary storage facility for radioactive waste on chargeable basis. Storage for long half lived (> 5 years) source under plan.

Orphan sources may arise due to main two reasons. One due to bankruptcy of the company and disappeared, another due to import of contaminated metal scrap.

Monitoring of scrap under process. To ensure security tracking of sources, particularly used in industrial radiography, through GPS and CDMA technologies.

Guide for re-use and recycle of disused sources was in force from January 2004. Return of disused sources to original suppliers is being implemented.

Have difficulties to re-export of industrial radiography sources, except Ir-192 sources, may be due to lack of suitable transport containers.

Conclusion: Good regulatory infrastructure (IT based), but has not regulations for monitoring metal scrap and no plan for disposal of long half life sources.

2. Country: Myanmar

Presented by: Mr. Htwe Aye

Main points: Dept of Atomic Energy, under the ministry of science and technology, is the regulatory authority. The existing atomic energy regulations cover licensing, inspecting and radioactive waste etc. Maintain of inventory of all sources. Well-managed disused Ra-226 sources in the past.

The presently operating storage facility is adequate to deal with the small no. of disused sources that will be generated. No mention about monitoring of scrap and detection of orphan sources at borders.

3. Country: Pakistan

Presented by: Mr. Khurshid Anwar and Zaheer Ahmad

Main points: Good regulatory infrastructure having separate radiation protection rules and radioactive waste management rules, which are in line with BSS, COC.

Encourage re-use and recycle of disused sources. Safe disposal of disused sources are charged. However, in case of detection and found of any orphan sources, government has national strategy to deal with such cases, including financial needs. Have two storage facilities and one near surface repository site under initiation. Detection of orphan sources at borders and searches of orphan sources are well being carried out.

4. Country: Philippines

Presented by: Ms. Thelma Artificio

Relevant regulations are drafted, reviewed and just due for publication. However, the system of authorization for facilities and radiation sources is not fully in compliance with GS-R-1, BSS and Code of Conduct. But, specific requirement for security of sources are stated in PNRI Regulations, i.e. CPR Part 11, 12, 14&16. There is a specific regulation: CPR Part 26 for security of radioactive sources. More activities on security of sources are being done with collaboration with ANSTO, ARPANSA and ORNL, USA.

Specific regulation on reuse and recycle of disused sources needs to be developed. Agreements from foreign countries for return of disused sources are submitted to PNRI, but sometimes take very long time to get such agreements from the local supplier.

PNRI has interim source storage facilities, but no waste disposal facility.

Database for all the sources in use are maintained.

Sometimes, license for short term storage is issued to users.

Monitoring of metal scrap is being carried out with the help of PNRI.

Plan for construction of permanent storage of disused sources is under consideration.

5. Country: Sri Lanka

Presented by: Mr. S.S.K. Kolambage

The Atomic Energy authority is under the ministry of Science and Technology. No separate regulations for management of disused sources, but the existing rule on control of public exposure is adequate to deal with.

Limited no of sources are in use. Only 45 registered institutions.

Large activity disused sources are being sent back to the original suppliers and some spent sources are permitted to store at users premises. Safety and security of sources are the responsibility of the licensee. AEA possessed interim storage facility.

Control at the port is done by installing portal monitors and arrangement for security of Cat. 1 sources in being done with the help of DOE, USA.

Generic issues pertaining to safe disposal of disused sources

1. Denials of shipment of radioactive material is causing inability to send back the disused sources to the original suppliers abroad or the storage/disposal facility within the country.
2. Radioactive contamination in metal scrap for use in recycling steel industry
3. Intensify the searches for orphan sources in those countries, where it is evident of finding orphan sources.
4. Sharing of interim storage/disposal facility on regional basis for those disused sources pending for safe disposal due to genuine reasons (bankruptcy of suppliers, high cost of disposal, damaged source, and unavailability of appropriate transport container etc.).

Appendix 4

Summary of Country Presentations Made on Dec 9 - Session 3c

(Rapporteur: Dr. Paul)

1. Country: Thailand

Presented by: Mr. Pisit Suntarapai

Office of Atoms for Peace (OAP), the regulation has 7 (seven) sections. The speaker showed the nature of practice, activity and total number of licensees.

National strategies include that all kind of radioactive sources require valid license. Inspections are conducted per year and per two year based on category of radioactive source.

Regulatory Frame Work: There is no particular regulation for reuse and recycling of sources.

Return of Disused Sources to Supplier: Agreement for returning the disused sources to manufacturer is required during the period of application for license of import. In case of any difficulty to send back the disused source to the supplier, source is kept at temporary storage, physical security is ensured by the licensee and finally sent to the interim storage of waste management centre. The speaker showed example of Co-60 teletherapy source.

Long-term storage/Disposal: No existing disposal site. Also no particular law for disposal. However, 3 interim storage facilities exist.

National Strategy for Orphan Sources: The owner or discoverer of orphan source must be declared or informed to the Office of Atom for Peace (OAP).

Regarding scrap material, there is no existing regulation, but OAP recommends to the steel company to install a monitoring system at steel factory. The speaker showed some cases for finding sources in scrap metal.

Strength: 8 senior experienced regulators are the strength for Thailand regulatory body.

Weakness: Experienced manpower will be retiring soon, so the regulatory body is going to face difficulty for lack of manpower. Moreover, most of the organization staff involved with ionization radiation activities have less knowledge.

Need: Support from Government as well as IAEA is required for job training. The existing act is needed to revise. Co-operation from local universities and training for young staff are required.

Vietnam Country Presentation, presented by Mr. Truong Giang La

Atomic Energy Law, based on BSS-115 and other guidelines of IAEA, was promulgated on 03 June 2008. The Ministry of Science and Technology (MOST) is responsible for implanting the regulations. Vietnam has one Research Reactor, 5 Irradiators, 15 Teletherapy, 3 Gamma Knife and 57 Industrial Radiography facilities.

Low and Intermediate level of radioactive wastes are generated in Vietnam and following are the origin of radioactive wastes:

Uranium ore processing, Research, Monazite treatment pilot (now stand by), Education, Medical, Industries etc.

Average amount of waste before treatment is:

60-180 m³ liquid per year and 15 m³ solid per year.

Sealed Spent Sources are:

- 5 Co-60 teletherapy sources from 3 facilities
- 2 Cs-137 Gamma Cell from 2 facilities
- 439 sources of Co-60, Cs-137 and Ra-226 from industrial, geological and other facilities.

Wastes are managed through mainly storing at user's premises and returning the disused sources to foreign suppliers and transfer to storage facilities of VAEI.

Database waste generator will be developed in future but at present database is maintained by using a part of E-RAIS

Import sources are declared at border to Customs and police check on the transport route. In this regard, the speaker showed the data on:

- Custom staff
- International Airport
- International Seaport
- Enforcement Unit

A total 20 staff, at present, is involved for radioactive waste management.

Vietnam has the following future plans:

- A new nuclear power plan by 2020
- Operation of new research reactor by 2015
- Thermal power plan using coal ,and
- Oil exploiting

Malaysia Country Presentation, presented by Ms. Amizah Othman

The regulatory body is “Atomic Energy Licensing Board”. Atomic Energy Licensing Act -1984 (Act 304) was promulgated to control activities of ionizing radiation. The act is at the final stage of amendment based on international standard. The speaker showed the details data for licensee. The current regulation (BSS, Licensing and Import) also is being revised based on international standards.

The radioactive sources are used for-

- Irradiator (Sterilization)
- Industrial Radiography
- Gauges
- Oil and Gas
- Medical
- Mineral Processing
- Education and Research

National Strategies: Without the prior authorization in writing from Regulatory Body, it is not possible to dispose any kind of radioactive waste.

Regulatory Body has a national database system for source information.

For import/export of source, the licensee must have Approval Permit from Regulatory Body and this Approval Permit is required to submit to custom.

Management of Disused Sources: Licensee is responsible to manage and bear the cost. Disused source is return back to manufacturer. So undertaking is required during application for license.

For any loss of control over radioactive material is informed to regulatory body immediately. Regulatory Body ensures the return of orphan source to the rightful owner. Installation of portal monitor at point of entry (airport, seaport and borders).

Scrap Metal: Scrap metal smelter companies are encouraged to install radiation portal monitors.

Mega port Initiative and National Detection System: Already taken some active steps for portal monitoring system.

Long-term storage/Disposal: At present only have Waste Management Centre (interim storage) but have plan for National Radioactive Waste Repository.

Strength: Adopted IAEA recommendation and guidelines. Have monitoring systems at points of entry.

Weakness: Act mentioned no clear provision on contaminated scrap metal. Portal monitor is not installed at all border locations.

Appendix 5

Issues for Working Group Discussions on Day 4

TRANSPORT RELATED ISSUES

1. Denial of shipment – refusal by carriers to transport packaged radioactive sources by road, water and air;
2. Challenge on security and safety aspect in transportation – In some countries there is a high risk of accidents during (road) transport and there is also a risk that a packaged source in transport may be stolen;
3. Transport containers for Disused Sources – how to make suitable transport containers available to regulatory bodies in a timely fashion?
4. International Control of refused shipments – How to ensure that a radioactive shipment refused entry at a port into one country will be properly returned to its point of origin and not dropped at a port with noradiation detectors.

POLICY AND STRATEGY ISSUES

5. Developing national policy & strategy for disused and orphan source control; Need for both a policy and a strategy or how to develop Policy and Strategy?
6. Self-sustaining program – what are the key tasks and programmes that will ensure that disused sources are safely managed now and in the future?
7. Expensive charge for re-export – the return of a source to a foreign supplier is often so expensive that licensees/users may abandon the source;
8. Training and awareness for the public, safety culture for users and licensees – how to develop and implement these programmes;
9. Reuse and recycle of disused sources – what are the policy issues associated with the decision to reuse/recycle sources?

MANAGEMENT SYSTEM ISSUES

10. How to maintain networking amongst regulatory bodies – methods and activities to continue to work together.
11. Coordination between regulatory body, RWF and users – how to ensure that disused sources will be managed in a safe and timely manner;
12. Coordination, leadership with customs, police, etc. – how to establish stronger links between customs/border organizations and police and the Regulatory Body so that sources found at the border or in need of protection will be well managed.

TECHNICAL ISSUES

13. Source tracking system – types of source tracking systems, how to establish, costs, advantages and disadvantages;
- 13a Orphan Source Search Campaign – How to control and prevent the creation of orphan sources and how to search for them
14. Reuse and recycle of disused sources – what are the technical issues associated with the decision to reuse or recycle disused sources; (POLICY ISSUE?)
15. Storage facilities (interim, LILW, etc.) – what constitutes a suitable interim storage location for LILW? (POLICY ISSUE?)
16. Certificate for Scrap stating that the shipment is “free of radioactive contamination” Effective?

ISSUES COMMON TO ALL WORKING GROUPS

17. Funding
18. Best Practices – List and describe
19. Outstanding Issues – List and describe
20. Action Plan proposal – to the IAEA, to the RCA and to each Member State at this meeting

Appendix 6

Working Group Report - Transport related Issues

Denials of the shipment.

1. In some cases it is one way denial i.e. one can import but face difficulty while trying to export the disused the source
2. In some cases it is both ways i.e. neither import nor export.
3. Refusal may be from all modes of transport i.e. air, water and road.

Solutions

1. Problem to be addressed at the international level organizations such as IAEA, IATA, ICAO and IMO .
2. The concerned regulatory bodied in the country need to make awareness among all stakeholders about the safe transport of radioactive material. The details of such denial of shipments should be collected by the regulatory bodies and report to IAEA for compilation and to addressed the issue at appropriate international forums.

Possible consequences

1. Finical implications: Due to delay of commercial operation of the radiation facilities because of transport delay.
2. Radiological hazard may arise due to the long time storage at user premises.
3. User may lose interest for the long time security provision of the disused source due to many reasons such as financial involvement for ensuring security, bankruptcy of the company, which may lead to the loss of the source due to stolen and misplacement) .
4. Depriving the users of the useful application of radioactive material particularly for medical applications. Also, the original supplier may face problem of recycling of the disused source if they don't get the disused source back.

Outstanding issues

It is understood that IAEA is taking up the problem at the appropriate international forums. Addressing the issue in one regional workshop at Beijing in June 2008, there were many action plans proposed to reduce and finally eliminate the problem. One action plan was to include the issue of denial of shipment in the international conference of PACTRAM(Packaging

and Transport of Radioactive Material), to be held in London, in October 2010, organized by IMO, UK Dept. of Transport in collaboration with IAEA. The organizer has announced the conference in their website, but there is no communication so far from the IAEA to the member countries about this conference.

Challenge on Safety & Security Aspects during transport – risk of accidents and theft

Solution:

1. When a radioactive material is transported in compliance with the IAEA regulations the safety concerned is addressed either by limiting activity to be transported or in-built safety in the design of the package and both. For example, a radioactive material is to be transported suitably in a Type A package, in case of an accident the radioactive contents may be fully released in the environment since this type of package is not designed to be able to withstand the accident condition of transport. However, the radiological hazard involved in such accidents may be limited since Type A packages are not used to transport radioactive material of activity greater than specified values of each radioisotope. When an activity greater than that allowed in a Type A Package (A1 & A2 values) requires to be transported, then one has to choose a Type B(U)/(M) package. This Type B(U)/(M) package is designed to be able withstand the normal as well accident conditions of transport. Even if there is an accident involving a Type B(U)/(M) package, the radiological hazard consequence may not be of that alarming except in few exceptional cases of sabotage with criminal intent.
2. To avoid the theft and sabotage with criminal intent, security during the transport is to be ensured through various means like providing physical protection, tracking of shipment, selection of suitable route of transport, co-ordination among the regulatory bodies, law enforcing agencies and other relevant agencies involved. Few or all the various means as mentioned above may be deployed on graded approach through the threat perception inputs received from the intelligence.

Transport containers for Disused Sources – how to make suitable transport containers available to regulatory bodies in a timely fashion.

Solutions: As per the statistics of transport of radioactive material all over the world, Type A Packages are the most widely used. In case a Type A Package

is required for transport a disused source, even if the original transport container is not available, a suitable transport container may not be difficult to find. If required, a new Type A Package can also be designed and made. However, in the case of a Type B(U)/(M) package requiring to transport a disused source, if the original transport container is not available, it may be difficult to find a suitable transport container. The various options that may be available are

1. Asking for an empty container from the supplier, if still exist, may be on chargeable basis
2. Use of another similar transport container ensuring that the activity capacity of the container is not exceeded.
3. Design a new Type A Package (for those sources that can be transported in a Type A Package) by the user
4. If all the options are ruled out, the existing transport container, may be an improvised one, the source holder in case of the nucleonic gauges, the source head itself in case of teletherapy units, an unapproved flask for transport of irradiator sources, may be used for transport under special arrangement, the provisions of which are provided in the regulations. However, transport under special arrangement involving trans-boundary movements requires prior approvals from the regulatory authorities of those countries through, into which, the purposed shipment is to be carried out. This may not come through very easily.

International control of refused shipments – how to ensure that a radioactive shipment refused entry at a port into one country will be properly returned to its point of origin.

Solutions: It is a general practice in every country that import/export of radioactive material is undertaken with prior approval from the regulatory body of the respective countries. In some countries, it is also required to get further clearances from the concerned government agencies such as civil aviation authority, shipping authority etc. As such, it is a practice that the actual export/import of the disused source will be carried out after ensuring that all the necessary clearances are obtained including confirmation from the concerned carriers (air/sea). It should be the responsibility of the user to ensure that the actual export/import is undertaken only after getting all the necessary clearances.

In case, the shipment gets stuck in a transit country, the regulatory body of the transit country should immediately contact the regulatory body of the country of origin of the shipment. The disused source should be returned to

the country of origin of shipment or forwarded to the country of final destination after taking a justifiable decision.

Common issues:

1. Funding:

- a) Fund required for anything related with a legal source should be borne by the legal owner/user of the source.
- b) In case of bankruptcy of the owner and orphan sources the financial need may be borne by the Government which may be supplemented by the Agency.
- c) It is high time for the regulatory bodies of the member states to introduce corpus fund to meet any exigency arises due to disused sources.

2. Best Practices:

- a) Transport of disused sources should ensure that Code of Conduct on Safety and Security of Sources - Guidance on Import and Export of the Radioactive Material, are followed.
- b) Confirmation of receipt of the transported source (fresh/disused) by consignee in the country of destination.
- c) Based on the degree of threat perception appropriate emergency preparedness and response plan should be in place in the country(ies) involved.
- d) More training and awareness programmes are required for all the stake holders.

3. Outstanding Issues:

- a) The action plan for reducing and finally elimination of denials of shipments as adopted in the Beijing Meeting, June 2008, needs to be reviewed and followed up by the Agency as well as member states.
- b) Countries which are not yet signatory to COC, should be encouraged to adopt the same.

4. Action Plan

- a) For IAEA
 - i) The agency should give priority to the issues related with denials of shipment of radioactive material in the developing

and poor countries since there is more vulnerability of the disused sources becoming orphan sources.

b) For the RCA and member states

- i) RCA members states should have a network for sharing of information, best practices and experiences about the transport of the sources (fresh/disused) so that transport within the region also becomes smooth.
- ii) A networking site should be developed for protected access (for security reason) by the member states.

Issues Related with Transport of Disused Sources

Sr. No.	Problem	Solution	Action by	Time frame
1.	Denials of shipment of disused sources	Action plan as adopted in Beijing meet in June, 2008. <i>The safety and security of the disused source(s) should be ensured by the user in their premises till denials of shipment is resolved.</i>	IAEA, IATA, ICAO, IMO, National focal points and national regulatory bodies as identified in the action plan	As given in the action plan
2.	Challenge on the Safety & Security Aspects during transport – risk of accidents and theft	When a radioactive material is transported in compliance with the IAEA regulations the safety concerned is addressed either by limiting activity to be transported or the in-built safety in the design of the package and both. As such the safety concerned with the risk of accidents, is not a cause for concern. However, the theft of the source during transport can not be prevented by complying with the regulations. To avoid such theft and sabotage with criminal intent, security during the transport is to be ensured	The consignor(user) and the concerned regulatory body	On going process(as and when happens)

		<p>through various means like providing physical protection, tracking of shipment, selection of suitable route of transport, co-ordination among the regulatory bodies, law enforcing agencies and other relevant agencies involved.</p> <p>The various means as mentioned above may be implemented on graded approach based on the threat perception prevailed at the time of shipment.</p> <p><i>Relevant IAEA guides on the issue may also be referred.</i></p>		
3.	<p>Transport containers for Disused Sources – how to make suitable transport containers available to regulatory bodies in a timely fashion.</p>	<p>a) Asking for an empty container from the supplier, if still exist, may be on chargeable basis.</p> <p>b) Use of another similar transport container ensuring that the activity capacity of the container is not exceeded.</p> <p>c) Design a new Type A Package (for those sources that can be transported in a Type A Package. Type A Packages are comparatively easier to design.</p> <p>d) If all the options are ruled out, the transport using a non-standard container or a Type B(U)/(M) Package of expired validity of design approval may be permitted under special arrangement. However, transport under special arrangement involving trans-boundary movements requires prior approvals regulatory authorities of those countries through, into</p>	<p>The user</p> <p>The user</p> <p>The user with the technical advice from the regulatory body.</p> <p>The user and the regulatory body</p>	<p>On going process(as and when happens)</p> <p>On going process(as and when happens)</p>

		<p>which, the purposed shipment is to be carried out.</p> <p><i>If all the options given above are exhausted, then the disused source(s) should not be transported, particularly for export. The source(s) should be safely and securely kept in the premises of the user with due permission from the regulatory body of the country till an alternate solution is found out.</i></p>		
4.	<p>International control of refused shipments – how to ensure that a radioactive shipment refused entry at a port into one country will be properly returned to its point of origin.</p>	<p>In case, the shipment gets stuck in a transit country</p> <p>a) the regulatory body of the transit country should immediately contact the regulatory body of the country of origin of the shipment.</p> <p>b) the regulatory body of the country of origin should immediately inform the user once the communication is received from the regulatory body of the transit country.</p> <p>c) the disused source should be returned to the country of origin of shipment or forwarded to the country of final destination after taking a justifiable decision.</p>	<p>Regulatory bodies of the transit country and, country of origin of shipment, and user</p>	<p>On going process(as and when happens)</p>

Appendix 7

Working Group 2 Report - Policy and Strategy Issues

Chairman: Khurshid Anwar (Pakistan)

Rapporteur: Robby Christian (Indonesia)

Members:

- MD. Ashrafur Islam (Bangladesh)
- Guo Xiliang (China)
- La Truong Giang Varans (Vietnam)
- S.S.K. Kolambage (Sri Lanka)

In this seminar, several problems related to policy and strategy were identified, which are:

- How to develop a policy and strategy for disused sources;
- Self-sustaining programme – key tasks to ensure that disused sources are safely managed;
- Expensive charge for re-export – cost may cause users to abandon the source;
- Training & awareness for the public, safety culture for users & licensees – how to develop & implement these;
- Reuse & recycle of disused sources – the policy issues?

Working Group 2 discussed the problems and made several conclusions and / or recommendations listed below.

1. Regarding on how to develop a policy and strategy for disused sources, the group recommended using this flowchart given in figure 1.

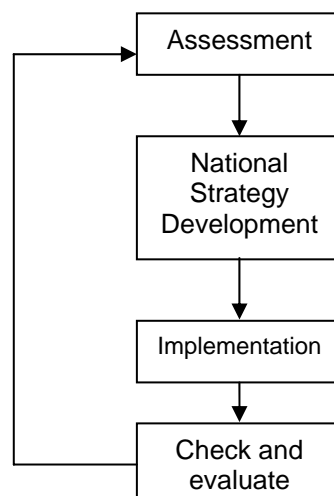


Figure 1. Flowchart for Developing National Policy and Strategy

For the first process (assessment), countries should:

- a. Identify its nuclear and radioactive materials utilization within the past, current, and planned future activities.
- b. Identify its current, existing regulatory infrastructures to support / govern current and planned future disused source management.
- c. Assess the danger and hazards of the existing and future use of sealed sources.

After a thorough assessment process, each country would then need to develop the corresponding policies and strategies. Prior to it, each country must have established an independent, strong and professional Regulatory Body through proper ordinance / Act which empowers the regulatory body to make appropriate regulations. Several considerations also must be given in developing the national strategy, which are:

- Import / export control of sealed sources
- Repatriation control of disused sealed sources
- Detection and handling of orphan sources
- Scrap metal monitoring, and follow up actions
- Graded approach to inspection programme and physical verification of sealed sources.
- Safety and security of sealed sources
- Inventory of sealed sources
- Border monitoring to prevent illicit trafficking of sealed sources.

The working group recommend aligning policies and strategies with international standards or practices to harmonize policies amongst countries, especially in the regional context. The group also recommend prioritizing which issues to be solved first, which issues should be given the most efforts, funding, and strict regulations. It is advised to use a matrix given in Table 1, where the most prioritized problem to be resolved is in the sector of both important and urgent.

Table 1. Matrix to classify problems based on their importance and urgency

Urgency \ Importance	Important	Not important
Urgent		
Not urgent		

The working group noted that it is important for policies to be well communicated to and understood by related government departments, in order to establish and sustain a good interdepartmental

coordination and networking. The group also concluded that reuse and / or recycle of disused source could substantially reduce the problems associated with storage or repatriation of it. However, the national policy should require some quality assurance programmes to be implemented in the reuse and recycle process. The working group also encouraged to consider remanufacturing as an alternative solution to reuse and recycle. Refurbishment of disused sources or any radiation generating apparatus shall not be allowed because there are no tests performed to ensure the safety of refurbished radioactive sources.

After all of the above processes have been done, it is advised to construct a comprehensive national action plan by using a template given in Table 2 below. Specific attention should be paid to ensure outcomes and activities be linked to each other.

Table 2. Template to be used in designing an action plan

Measurable Output	Achievable Outcome	Specific Activity(ies)	Resources	Time of execution
...
...

The working group recommends that after all the necessary policies have been made, and strategies to implement them through a comprehensive action plan have been composed, specific attention be paid in implementing those policies and strategies. Based on the priority matrix, problems in the first quadrant, problems which are both important and urgent, require more strict control. Therefore, it is advised to create derivative, mandatory regulations to govern those problems in more detail. For problems which are of less priority, efforts and resources are less required to control them. Therefore it is advised to resolve these problems through the mean of technical standards, which are voluntary in nature.

The working group also addressed that an appropriate necessary budget needs to be secured in order to implement the strategies and policies. This funding will be needed to upgrade the competency of key personnels, through proper training programmes. If the national policy requires the availability of national storage / disposal facilities, some amount of the budget will also be required to construct those facilities and to purchase the required equipments / machineries.

The working group recommend that at specified intervals, check the Key Performance Indicators (KPIs) and / or Critical Success Factors (CSFs) of the national action plan. Address the weaknesses of the plan. This will be a significant feedback to be assessed, to analyze the effectiveness of the national strategy. This analysis shall then be used to improve and revitalize the national action plan.

2. Regarding on how to ensure sustainability of the management of disused sources, the working group identified some important points to be resolved in repatriating disused sources. The group collected some reports of the high cost to repatriate disused sources in some countries. The group then analyzed the key elements of repatriation fee, which includes fee for transport containers, fee of risk of shipment delay and denial, fee of risk of the dangerous nature of radioactive materials. The working group offers some options to solve this problem which are :
 - a. Allow for reuse of radioactive sources.
 - b. Government shall provide funding to repatriate disused source back to its original country.
 - c. Government shall provide centralized storage facility. If owner are unable to pay for repatriation, then they may store their disused sources in the national facility.

The working group also recommend countries to establish a trade facilitation system. This system, which has been implemented in Indonesia, has been proven effective to reduce time and cost associated to import and export process which relate to all kinds of goods, including radioactive sources and disused sources. Whenever possible, taxes applied on import and export of radioactive sources should also be reduced.

When all of the above have been done, it is advised to repatriate disused sources back to their original country. This goes especially for disused sources with long half live and high activity, since they pose greater long-term hazard and threat, compared to other disused sources, to be stored in the national facility.

The working group encourages local networks such as ANSN (ASEAN Nuclear Safety Network) or other regional network to help promote ratification of the Joint Convention to non Contracting Parties in their network. This will reduce the problems with delay and denial of radioactive material shipments. If there are countries who do not wish to ratify the Joint Convention, it is advised to the network to ask

those countries to comply only to the requirements listed in Article 27 and Article 28 of the Joint Convention.

The working group also recommends the use of borehole disposal system as a feasible and affordable solution for a disposal facility of disused sources. The technical aspects of this borehole system have been addressed in quite detail in IAEA Technical Report Series 436. This Technical Report can also be referred by countries who are considering other disposal options for their disused radioactive sources.

3. Regarding the issue of public awareness program, the working group recommends to Regulatory Bodies to actively provide campaigns through the media available. Television network, radio channels, newspaper advertisements, or website information could be useful in providing correct information to the public about radiation safety, orphan sources, and scrap materials. Leaflets can also be made and freely distributed to some more specific targets. For example, leaflet on the risk of contaminated scrap metal can be freely distributed to metal recycling companies. The working group also advises regulatory bodies to hold workshops and seminars, either designated for users, personnels of related government organizations (e.g. Police dept., Customs and the Border Securities), and member of the public. Regulatory Bodies can also conduct periodic re-training / refreshment course programs for licensed radiation workers.

Appendix 8

Report of Working Group 3- Management Systems Issues

Chairman: Mr. Bok-Hyoung Lee (Korea)

Rapporteur: Ms. Thelma P. Artificio (Philippines)

Presenter: Mr. S K Mishra (India)

Members:

Mr. Naripon Pensiri (Thailand)

Mr. Azhar (Indonesia)

Observer: Mr. Kazuo Sakai (Japan)

Topic: Coordination between regulatory body, RWF & users- how to ensure that disused sources will be managed in a safe and timely manner

Best Practice:

1. Licensees send letter to the regulatory body stating that it will be disposing of its disused source.
2. RWF inquires from the regulatory body about the details of the disused source.
3. Regulatory body inspects the disused source to be disposed of at RWF.
4. Licensee secures certificate for transporting the disused source to RWF or supplier/manufacture abroad.

Networking:

1. Provision of disposal report of the RWF to the regulatory body.
2. Sending thru fax or email of the copy of the receipt of the disused source by the supplier.

Comments:

1. Users need more guidelines for waste management
2. Licensed users do not coordinate due inadequate funds for waste disposal

Recommendations:

1. Education of the licensees by the regulatory body on the need to dispose of disused sources (regulatory conferences, refresher courses etc.) which can be done for each practice in six months time.
2. Assessing the competence and capability of the licensee by the regulatory body in disposing of its disused source through conduct of regular inspection (e.g. annually).

3. Establishment of a regulatory information system (in a year's time) that will make the regulatory body aware of which licensees have disused sources and must be disposed of
4. Inclusion in the license - specific condition of the definite time (not be more than 2 years) of transfer of the disused source to the waste disposal facility/return to the supplier
5. Making announcements to inform the applicants that license will not be issued if disposal plan is not set up. This will be done every time there's an applicant.
6. Making arrangement (say an agreement or MoU etc.) with the government of the supplier country that it will take responsibility of the disused source if the supplier/ manufacturer goes bankrupt.

Topic: Coordination, leadership with customs, police, etc – how to establish stronger links between customs/border organizations and police and the Regulatory Body so that sources found at the border or in need of protection will be well managed

Best Practice:

1. Regular meeting between the regulatory body and concerned authorities and organizations customs, and police.
2. Setting up of Memorandum of Agreement with the customs and police.
3. Formation of a team composed of the regulators, police, radiation safety officers, university professors and fire officer, e.g Ubiquitous Radiation Emergency Supporting Team (U-REST) of Korea

Networking:

1. Direct link with the regulatory body to check data on licensed users of radioactive materials.

Comments:

1. Security/Custom staff requires special training on the radiation safety
2. Staff frequently transfer

Recommendations:

1. Prepare and regularly revise an annual plan for education and training of Customs personnel and police force to be conducted by the regulatory body.
2. Make a link (e.g. management information system- extranet) with custom so that verification of shipment can be done easily

Topic: Maintenance of networking amongst regulatory bodies - methods and activities to work together;

Best Practice:

1. Participation in regional seminars, workshops, conferences

Networking:

1. Hosting of regional seminars, workshops, and conferences
2. International networking

Comments:

1. Regular meetings are not conducted in the country
2. IAEA seminars and workshops may not always be available

Recommendations:

1. Conduct national workshops twice a year among relevant regulatory bodies where recent issues on managing disused sources can be discussed
2. Create MoU with the relevant authorities, organizations and other countries' regulatory bodies for the effective networking
3. Create a website for regulators where issues and events may be posted in six months time.
4. Participate in RaSaReN within six months.
5. Regular updating of IAEA database (e.g. PACTRAM) and training materials etc. and sharing with Member States

Appendix 9

REPORT OF WORKING GROUP 4: TECHNICAL ISSUES

NO.	TOPIC	AIM	ISSUE	SUGGESTION OR ACTION PLAN	ACTION TAKEN BY
1	Source tracking system	1. To identify the current location of the source	Technology for tracking the source location	<ul style="list-style-type: none"> • Installation of GPS system - for mobile source (for Cat 1 & 2) • Use the special software • Radio Frequency Identification System (RFID) (source category 3& 4) • Giving ID number for each source 	Owner/Licensee
		2. Reduce possibility of orphan source	No competent agency responsible to establish/ manage the system	Designating a competent agency to establish the tracking system	Regulatory Body
		3. Enhance the country security system	High cost and technology	<ul style="list-style-type: none"> • Licensee responsible for installation of GPS cost • Funding for develop the system 	Licensee
			Networking	Coordination among user, manufacturer, importer, exporter and vendor.	Regulatory Body
				Collaboration among regional country in sharing the technology	Member State

NO.	TOPIC	AIM	ISSUE	SUGGESTION OR ACTION PLAN	ACTION TAKEN BY
2.	Orphan Source Search Campaign	1. Ensure the safety to the public	No mechanism for searching programme	Develop national searching programme: <ul style="list-style-type: none"> Identify the agencies involved for searching programme Identify the role of the involved agencies Develop standard operating procedure for searching Identify method of campaign Identify location to carry out searching (high potential location of orphan sources) 	Regulatory Body
			Public do not have the knowledge or do not know the risk of radioactive source	Give awareness to public by dissemination of information on orphan sources by media or poster: <ul style="list-style-type: none"> Identify the information to disseminate to public – what is radioactive, the hazards, the symbol, photo of radioactive source, who should be contact if radioactive source is found and etc. Distribute or stick the poster at public area such as shopping complex, bus station, etc, at school/university, nearby the industrial area, medical facility and etc. 	
			Ability for searching	<ul style="list-style-type: none"> Identify equipment needed for searching. Identify skill needed for searching. Conduct training to staff Award to people who found the orphan 	

NO.	TOPIC	AIM	ISSUE	SUGGESTION OR ACTION PLAN	ACTION TAKEN BY
				source.	
			Funding	Government responsibility	
			Networking	<ul style="list-style-type: none"> Identify lead agency to conduct the searching. Identify point of contact from each agency that involve. Collaboration with regional country those have searching capability. Cooperation between neighboring country for searching at border Technical cooperation with IAEA/regional for training 	
3.	Reuse and Recycle of Disused Source	1. Reduce radioactive waste in the state 2. Save cost for waste management	Condition of the disused source	<ul style="list-style-type: none"> Required performance test before reuse – need to set up procedure to reuse DRS 	Regulatory Body
			Ability to check the quality of the DRS	<ul style="list-style-type: none"> Set up facility for quality test of DRS. Identify competent staff/company to check the quality of the DRS Identify Standards for checking– based on manufacturer Quality Assurance 	Regulatory Body/manufacturer
				<ul style="list-style-type: none"> Encourage licensee to reuse DRS by publish a pamphlet the advantages of reuse the source and the procedure to reuse the source. 	
			Possibility of orphan source	Requirement for reuse the source: <ul style="list-style-type: none"> Licensees are subject to the existing 	Regulatory Body

NO.	TOPIC	AIM	ISSUE	SUGGESTION OR ACTION PLAN	ACTION TAKEN BY
				disposal requirement – licensee (current owner) need to get approval for disposal of sources by transferring of ownership to second party (licensed future owner). <ul style="list-style-type: none"> Licensed future owner shall submit Return of Possession to Regulatory Body upon received of sources. 	
			High cost and technology for recycling the disused sources	<ul style="list-style-type: none"> Not recommended to recycle the sources due to high cost and technology is needed to recondition the disused source. 	
4.	Storage Facility	1. To enhance the security and safety of DRS.	<ul style="list-style-type: none"> Strategic location for storage facility Public acceptance 	Carry out site survey – free from natural disaster (such as earth quake, flood, etc), without resource such as (mine, etc), far from populated area.	Government or competent private company
		2. To protect public and environment	Safety and Security System	<ul style="list-style-type: none"> Safety System: Fencing around the facility, gate control system like finger print, power supply system, draught system, lifting system Security System: Laser system, security guard, dog, alarm system, CCTV 	
			Adequacy of human resources e.g. qualified workers, management staff, and other	<ul style="list-style-type: none"> Training to the operator Regional cooperation for sharing information and technology to develop storage facility 	

NO.	TOPIC	AIM	ISSUE	SUGGESTION OR ACTION PLAN	ACTION TAKEN BY
			Funding	Government or competent private company (licensed by government)	
5.	Certificate for scrap metal	1. To ensure/verify the scrap metal are free from radioactive sources.	No standard procedure and criteria to check the scrap metal	<ul style="list-style-type: none"> Set up a standard procedure and criteria for scrap metal screening Scrap metal trade association in the region should appointed company (third party) responsible to carry out the screening. 	Regulatory body
			Method of monitoring	<ul style="list-style-type: none"> Installation of portal monitor at border/port 	
		2. To enhance the reliability of the certificate.	Who responsible to issue the certificate	<ul style="list-style-type: none"> Company licensed by regulatory body 	
			Type of certificate	<ul style="list-style-type: none"> Only state that the scrap metal “has undergo screening” but not “free from radioactive” 	
			Reliable equipment for monitoring	Same standard of equipment for monitoring – regular calibration and maintenance are needed to maintain standard and reliability	
			Networking	Coordination among regulator and scrap metal company	

Group Member:

Mr. Hongxiang An (China) – Chairman

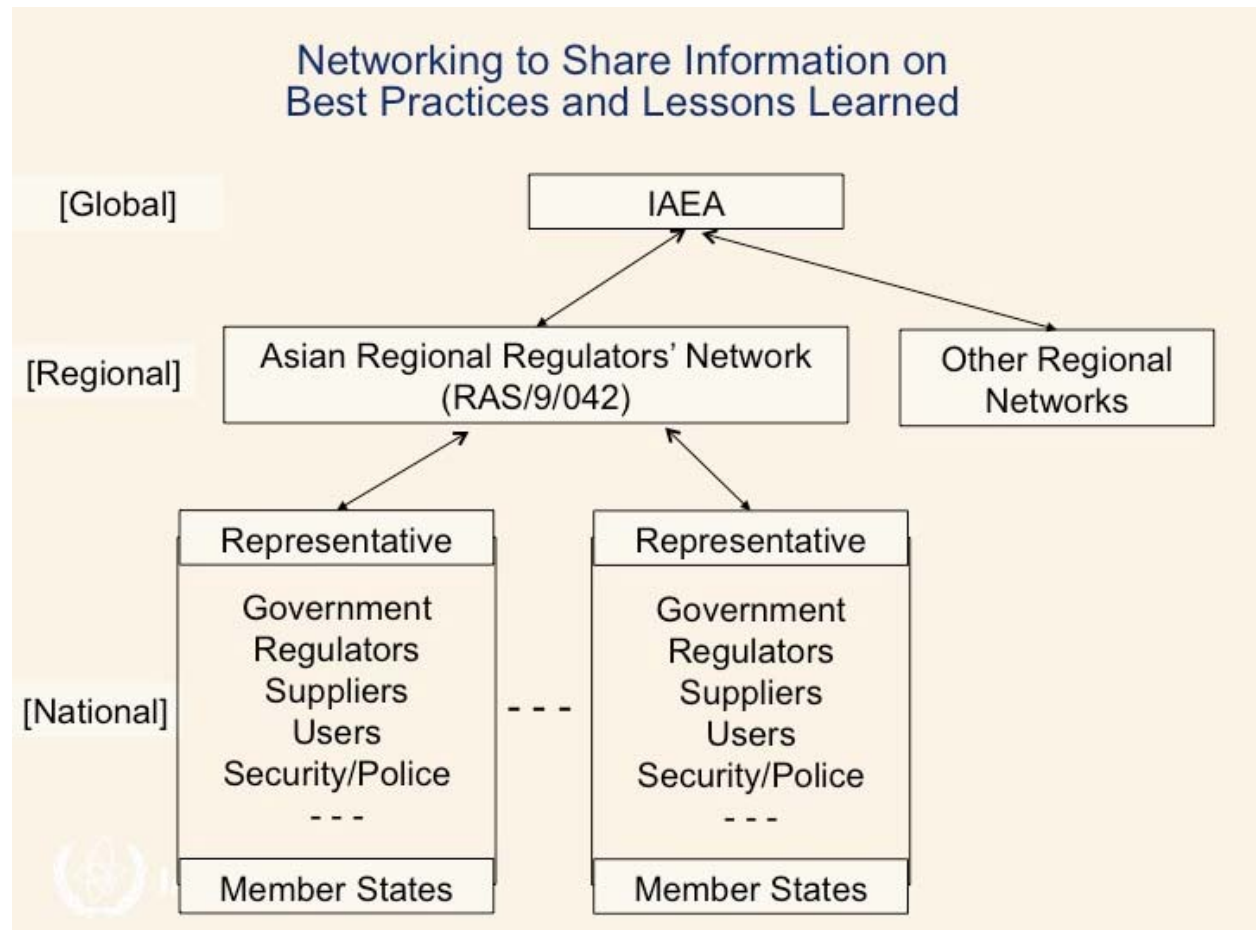
Ms. Amizah Othman (Malaysia)

Mr. Pisit Suntarapai (Thailand)

Mr. Htwe Aye (Myanmar)

Appendix 10

Networking model presented by the Coordinator of the Regional Cooperative Agreement



Appendix 11

Seminar Feedback from Participants

Regional Coordinator:

- Very good introduction on the first day
- We should have more time introduce ourselves
- Country report we learn a lot
- Waste management visit is also very good
- We need more time more discussion to make up final report/suggestion
- Disused sources have many things to do with radiation protection. More issues were identified than the solution, a good starting point for more collaboration in the region.

IAEA Expert (China):

- Important for regional needs
- Very well organized
- Deep impression to many country presentation
- Further communication needed

Philippine

- Hospitality is great
- Need more time for group discussion

Pakistan

- Learn a lot of useful knowledge
- Time is too short
- Thank the IAEA
- Visit is very useful
- Good exercise and interaction, learned a lot: Useful method.

Myanmar

- Thank to IAEA and host country
- Learn many new things from the seminar

Malaysia:

- Looking improvement to her country
- Learn a lot from working group

Indonesia

- Need more time for discussion or working groups
- Thanks to the IAEA

Korea

- Time is not enough to discuss all the recommendations were made by the group
- A lot new knowledge useful for my work in the office
- Thank to the IAEA and the host country
- Lack of time for discussion

Vietnam:

- The seminar is very well organized. Thanks to Indonesia
- Discussion is very important
- Learn many things from visit
- Thank to the IAEA for supporting the member states
- Knowledge from this seminar will be very important to my job in my country

Sri Lanka

- Thank to IAEA and the Host Country
- Time period is not enough
- There should be a course also in networking, according to the title of the course

India

- Time problem: very well structure of time given, anyway
- The keyword is "Sharing"
- This meeting is a great help.
- Enjoy the hospitality
- The seminar is very informative and useful
- Management of orphan source is different from disused source. It would be worried for the country without interim storage.
- Monitoring action plan suggested in the meeting. IAEA to remind member states of the progress after the meeting. Exchanging information is also very important.

China:

- Detail problem/recommendation need to be discussed
- Seminar is very useful.
- Every country gives their good practice
- How the recommendation could be implemented in each country
- Seminar like this should be done again in the future

Bangladesh

- We less discuss on networking
- Implementing SMART recommendation
- Learn a lot from the IAEA and all country. Thanks to IAEA and Indonesia
- Very useful as a guideline to manage disused source properly
- The field visit can be as a comparison to our facility and very useful to identify improvements.

Thailand





- Thank to Indonesia and IAEA
- Very good for us to learn how to manage disused source
- Sometime is not easy to follow without printed materials
- Discussion should be 1.5 days
- Thanks to IAEA, BATAN and BAPETEN
- I would report to my agency that we had to improve many things on the management of disused source





Appendix 12





A. LIST OF PARTICIPANTS





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