

Nuclear Forensics as an important tool in Nuclear Security Event Investigation

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Background

Based on BAPETEN nuclear emergency response team's experiences, they do not only respond to nuclear emergency issues but also to nuclear security issues, such as: lost of dangerous source, lost of radioactive source in industry, and found an orphan source.

Based on BAPETEN Chairman Regulation (BCR) No. 1/ 2015 BAPETEN designed mobile expert support team (MEST) as part of nuclear emergency response team.

Since nuclear security event could increase become a nuclear or radiological emergency, BAPETEN MEST on scene should assess the situation and justify when the emergency respond is required.

Infrastructure to respond to nuclear security event

Nuclear Emergency Response Organization (NERO) has been developed since 2006. As much as possible the organization to respond to nuclear security event is similar to the established organization, but since nuclear security event is a criminal act, generally the Police will be the incident commander.

If only there is an escalation of the event that could threaten safety of public, property loss and damage to the environment then the mechanism could be switch to nuclear emergency response mechanism.



Figure 2. National Field Exercise on RDD scenario, Jakarta, 22 September 2005

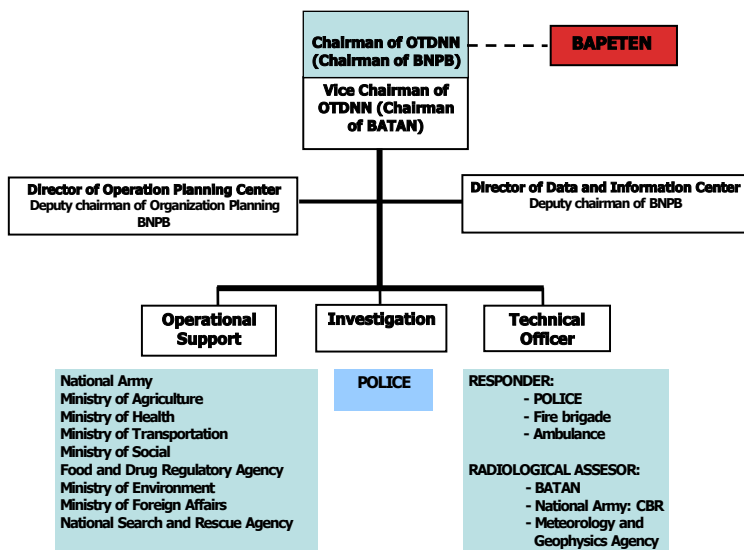


Figure 1. Structure of National Nuclear Emergency Response Organization

Emergency response related to nuclear security event will required involvement from other security agencies, such as:

- Co-ordination Ministry of Politics, Law and Security
- Directorate General of Customs and Excise
- Port Operator
- Ministry of Defence
- Ministry of Research and Technology
- National Counter Terrorism Agency, and
- State Intelligence Agency

On 19 August 2014 BAPETEN has initiated the launched of Indonesia Center of Excellence on Nuclear Security and Emergency Preparedness (I-CoNSEP). The primary role of I-CoNSEP is to facilitate the development of human resources and the provision of support services on several levels to ensure the long-term sustainability and effectiveness of nuclear security and nuclear emergency preparedness. For nuclear forensics it also includes the effort to combine the expertise of traditional forensic and nuclear forensic capabilities.

Exercise and Drill

The goal of exercise and drill is not only to test and to evaluate the arrangement or the personnel, but it also to build a collaboration spirit and trust among stakeholders. Since in a real event, even more in emergency, response time is a crucial and a good response time would be achieved if there is a good trust among stakeholders. Regular exercise and drill will also enhance coordination among stakeholder.

BAPETEN conducted a National Field Exercise. Scenario: Radiological Emergency Respond to a Dirty Bomb (RDD). Jakarta, 22 September 2005.

Response to nuclear security event

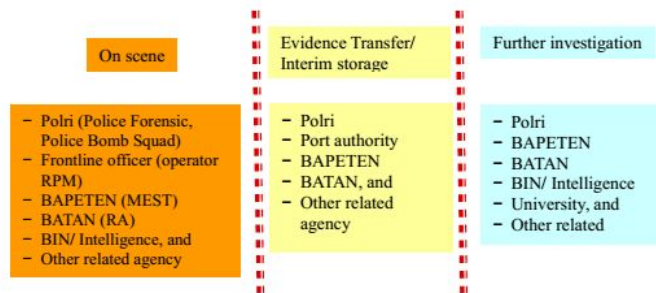


Figure 3. Related agencies in response to nuclear security event

On scene BAPETEN MEST provide remote and on site technical support to advanced radiation detectors such as HPGe to evaluate spectra to characterize the nuclear or radioactive material, to perform gamma and in particular neutron dose rate measurement and to confirm the presence of contamination, assess nuclear security and radiological risks, and assess when emergency response is required. They also provide support in coordinating transport of seized nuclear/ radiological materials.

It should be noted that on scene characterization as a preliminary nuclear forensics analysis should not destroyed or influenced any traditional or radioactive evidence.

The collected evidence will be sent to a nuclear forensics laboratory. For this issue, so far technical arrangement will send the evidence to BATAN or BAPETEN laboratory for further analysis. If only it could not analyzed ourselves then we could asked international assistance through bilateral, multilateral or through IAEA arrangement.

The Licensee database record in BAPETEN is an important tool for further investigation or analysis. It also can be developed for nuclear forensics library. By developing a correlation between evidence characteristics and description of nuclear or radioactive material in database, then the possibility of nuclear or radioactive material identification, or it history could be created. And also, by combining the result from traditional forensic analysis and nuclear forensics analysis, then they could be an important tool for achieving an investigation conclusion.

Conclusion

Considering that nuclear security event could increase become a nuclear or radiological emergency. BAPETEN developed MEST expert as part of nuclear emergency response team in order to ensure if the situation need the implementation of additional safety precautionary measures and to ensure if the activation of emergency response is needed as soon as possible as it justified.

As we are in the developing step of our emergency preparedness and response capability as well as nuclear security response capability, then we also have to consider to develop our capability in nuclear forensics since it is an important tool in the investigation process of the event.