HOW CAN NATIONAL AUTHORITIES ENHANCE CBRN HAZARDOUS WASTE MANAGEMENT? – LESS WASTE AND INCREASED AWARENESS

by Dr Yaugen Ryzhykau

First of all, let's unpick the meaning of CBRN security, before considering what could be improved.

In the field of security 'CBRN' is the abbreviation commonly used to describe the malicious use of chemical, biological, radiological and nuclear materials or weapons with the intention to cause significant harm or disruption, as well as technogenic incidents and incidents caused by the delayed on set of hazardous CBRN materials from by-products and wastes. The hazard posed by these materials varies:

- **Chemical**
  Poisoning or injury may be caused by chemical substances, including traditional (military) chemical warfare agents and harmful industrial or household chemicals.

- **Biological**
  Illnesses may be caused by the deliberate release of dangerous bacteria or viruses, by biological toxins (e.g. ricin, found in castor oil beans), or by improper management of biomedical wastes.

- **Radiological**
  Illness can be caused by exposure to harmful radioactive materials or by-products and wastes.

- **Nuclear**
  Life-threatening health effects can be caused by exposure to harmful radiation, thermal or blast effects arising from a nuclear detonation, or nuclear materials used for peaceful purposes.

CBRN security entails procedures or measures designed to protect the population against the immediate harmful and/or delayed effects of CBRN substances and/or wastes containing such substances, including chemical and biological waste.

Prior even to implementing these "procedures or measures", however, it is crucial that a national strategy for the streamlining of CBRN waste management is developed, required budget allocated and approved by the relevant authorities. By establishing stra-

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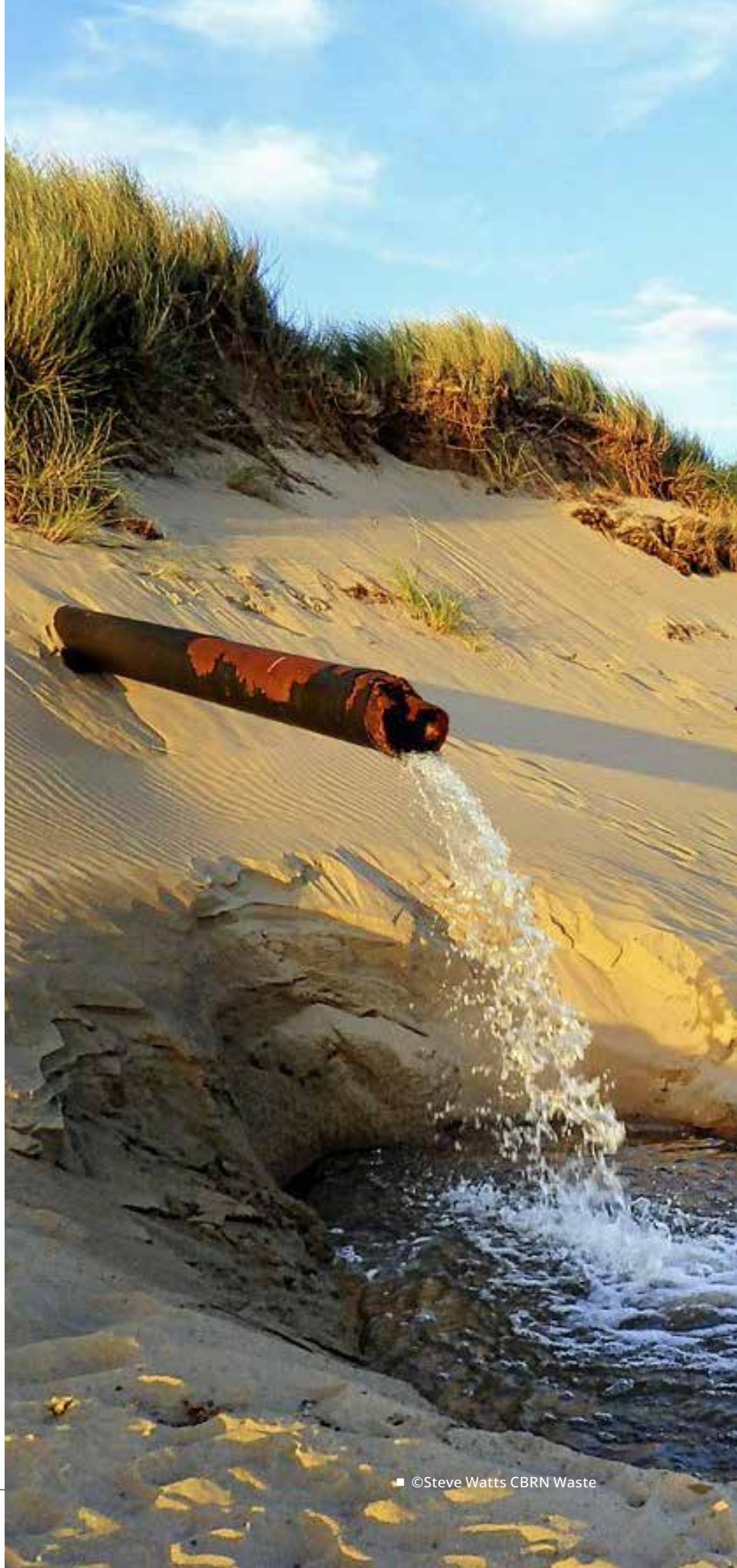
tegic targets in the long-recognized hierarchy of waste management, including CBRN hazardous waste, it is possible to attain the ideal outcome, which consists of: prevention, minimization, recycling and reuse, biological treatment, incineration, and landfill disposal of CBRN waste.

In order to achieve the strategic targets, focus should principally be placed on efforts to enhance particular elements of the CBRN material security and waste management capabilities of the respective national institutions. However, complexity arises from the need to follow an identified special approach during the conceptual elaboration of CBRN security strengthening, as well as during the follow-up prioritization of activities on a country-by-country basis, depending on the national CBRN security status at the given time. In order to move towards a "bottom-up approach" – considered being best practice – scientific and technical pragmatic review, as well as consultations and consensus among relevant national and international experts, are crucial elements.



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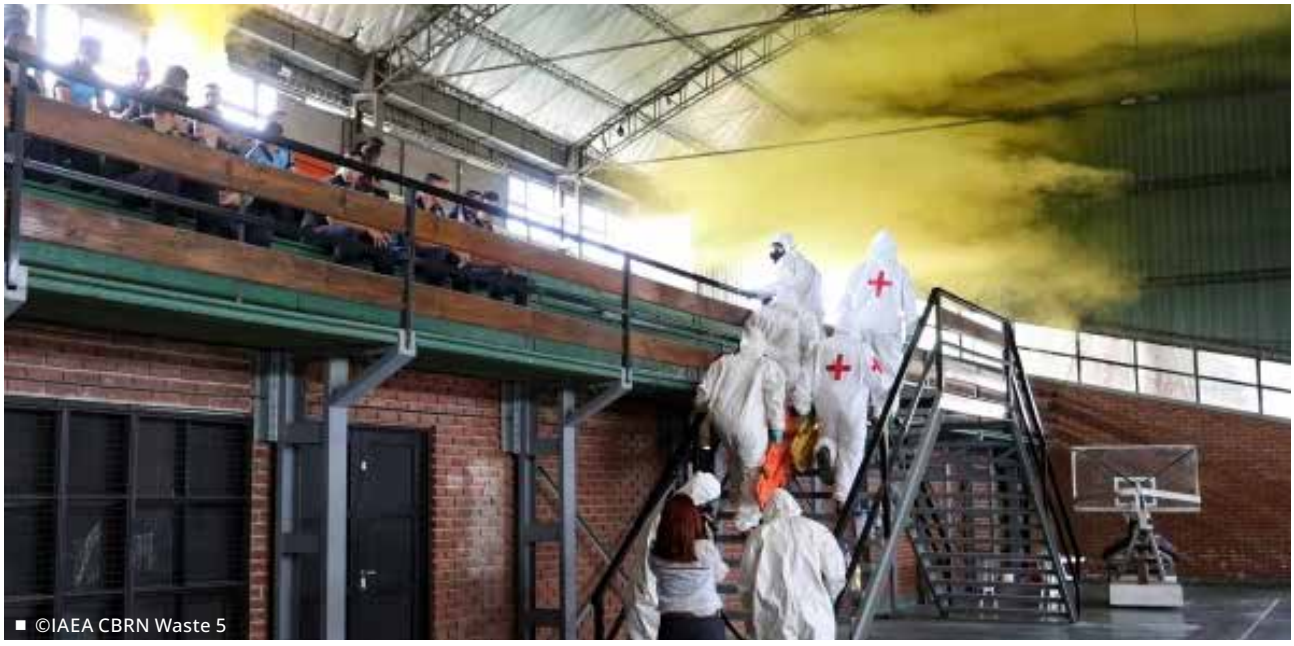

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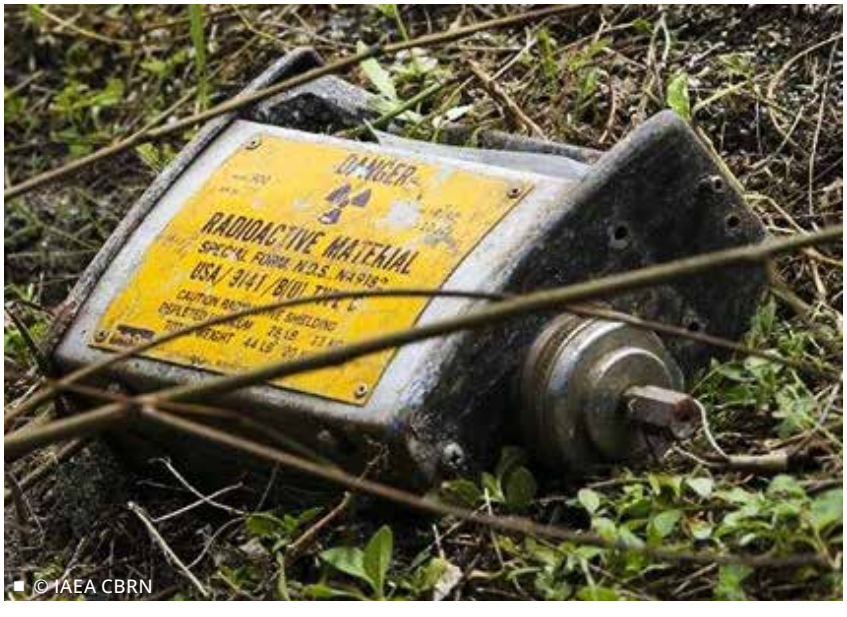
Target groups

The target groups for the implementation of CBRN waste security strategy include, first of all, the legislative and regulatory institutions of the relevant national authority, stakeholders involved in CBRN tasks (such as waste management regulatory authorities, waste management operators, waste transportation facilities, safety and security service providers for the waste management operators etc.),as well as the majority of the population, including the youth.



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Overall objective

The overall objective of strengthening hazardous substance waste management for improved CBRN security, including chemical and biological waste, should align with the developed and approved national strategy. It may be achieved through the implementation of the following measures:

- **Development and/or improvement of the existent legislative, regulatory and procedural framework,** depending on the current national level. In most developing countries, this is one of the key issues which should be solved first.
- **Establishment of a clear and complete structure of waste management bodies, which cover all**

steps of CBRN waste management: safe and secure collection, transportation, separation, processing, storage, disposal and inventory of hazardous CB waste originating from local industry (CBRN waste producers and CBRN waste management facilities), the energy sector, trade, agriculture, health care and past activities (dumping sites, historical industrial sites, former military bases etc.), as well as waste which is a consequence of emergency response and recovery processes.

- **Review, find and optimize the necessary resources (financial and material) for the systems and equipment needed by sites/facilities/labs dealing with CBRN waste.** This may include technological equipment for CBRN waste destruction, transportation, packing and storage, supporting materials, PPE and analytical equipment.

- **Develop and/or increase understanding of waste issues in stakeholders/responsible parties/policy makers/technical workers and the public,** in order to incrementally raise knowledge to the appropriate level. Knowledge and training should be based on the best practices from developed economies and highly effective, ecologically proven approaches in regard to CBRN waste management.

- **Increase number of specifically trained personnel to be able to correctly handle CBRN waste at every step of processing.** Depending on the country-specific context, the training may start at an introductory level and continue till all personnel are trained adequately.

- **Establishing a basic level of and/or improved hazardous waste handling,** including e-waste, plastics and bio medical waste outside of specific sites/facilities, e.g. in household use, municipal waste.

- **Review information collected on sites with known chemical and biomedical waste issues and create plans for remediation or clean-up.** Such activities must be conducted under the national relevant legislation and using national and/or international resources.

- **Establishment and/or improvement of collaboration between countries in particular regions with regard to joint approaches for CBRN waste management** and response and effects mitigation. Propose, develop and establish a regional, sustainable consultation mechanism that countries may use on a regular and case-by-case basis for CBRN waste issues.
- Overall, the implementation of national CBRN waste safety and security – in particular hazardous chemical and biomedical waste management – involves reducing the quantity of hazardous substances produced, treating hazardous wastes to reduce their toxicity, and applying sound engineering controls to reduce or eliminate exposures to these wastes. These measures must be based upon comprehensive national legislation and regulation, the proper education and training of all relevant stakeholders, and the increased awareness of the population as a whole.

THE AUTHOR AND THE PROJECT

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He is an expert in: WMD and CBRN; CW and CW synthesis and production; CW destruction technologies and toxic waste management; RN safety; Expert in WMD no-proliferation treaties.

About the EU CBRN CoE Project 65 - CABICHEM
The project aims to strengthen existing chemical and biological waste management capabilities to ensure safe and secure collection, transportation, separation, processing, storage, disposal and inventory of hazardous CB waste originated by local industry (CB waste producers and CB waste management facilities), trade, agriculture, health care and past practices (dumping sites, historical industrial sites, former military bases etc.), as well as a consequence of emergency.

CABICHEM is funded by the European Union through its Instrument contributing to Stability and Peace and implemented to benefit the partner countries of the region of Central Asia, namely the Islamic Republic of Afghanistan, the Kyrgyz Republic, Mongolia, the Islamic Republic of Pakistan, the Republic of Tajikistan and the Republic of Uzbekistan.

Project 65 seeks to support national and regional bodies involved in the waste management main issues as well as to assist countries in reviewing and evaluating their legislative provisions on the matter. The project aims further to raise awareness of the issues associated with chemical and biological waste management as well as to provide training activities, including the train-the-trainer approach also based on a tailored e-learning instrument.

The project is coordinated by Military Institute of Chemistry and Radiometry – MICHR from Poland, and will be implemented by Fondazione FORMIT, the Istituto di Scienze e Tecnologie Molecolari – ISTM-CNR from Italy, the Military Institute of Hygiene & Epidemiology – MIHE from Poland, the Fondazione Alessandro Volta – FAV from Italy. Local senior experts with experience in CBRN domain are supporting the activities in the partner countries.