## Scenario 8-R: Customs security check

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| **Scenario 8-R: Customs security check** | |
| **Complexity of the scenario: moderate** | |
| **Possible application of the scenario: Topics 4.1, 5.1, 5.2, 5.6 and 6.1** | |
| **Scenario description:** | |
| At the border between two countries, a freight train was being inspected by 2 junior customs officers. During the inspection, some crates were removed from the train and brought into the warehouse for a closer examination.  Inside one of the boxes, the customs officers found a metal object with a diameter of 2 cm and a height of 10-12 cm which they handled for some time before calling two senior custom officers to enquire about what the object could possibly be.  The senior officers, alarmed by the shape of the object, performed a radioactivity measurement and detected a radioactivity level several times higher that the normal background radiation.  At this point, alerted by their discovery, the officers immediately moved away from the object and called the emergency services for the recovery of the object.  While waiting for the first responders to arrive, one the two junior officers who handled the object started to experience nausea and the other started to have a headache.  The object was later determined to be an unshielded Cs-137 source.  **Things to consider:** Caesium 137 (Cs-137) is a Beta and Gamma radiation emitter. Cs-137 is used in small amounts for calibration of radiation-detection equipment, such as Geiger-Mueller counters. In larger amounts, Cs-137 is used in medical radiation therapy devices for treating cancer; in industrial gauges that detect the flow of liquid through pipes and to measure the thickness of materials. Small amounts of Cs-137 are incorporated into Lucite disks, rods, and seeds.  It is likely that the source found belonged to a medical radiation therapy device or an industrial gauge.  External exposure to large amounts of Cs-137 can cause burns, acute radiation sickness, and even death. However, if symptoms such as nausea, fatigue, vomiting and headache occur very quickly after exposure, the radiation dose must be extremely high (>50 Gy) and severe, even fatal, radiation sickness is to be expected. Skin rash generally appears after several hours even with very high doses therefore, in this scenario, it would be advisable to monitor the symptoms on the officers involved for some time after the incident. Prolonged exposure to Cs-137 can increase the risk for cancer because of exposure to high-energy gamma radiation. Internal exposure to Cs-137, through ingestion or inhalation, allows the radioactive material to be distributed in the soft tissues, especially muscle tissue, exposing these tissues to the beta particles and gamma radiation and increasing cancer risk.  In this scenario, considering the level of radiation measured, the customs officers might have been exposed to an external acute dose of radiation, but it is unlikely that they inhaled or ingested the material. Although the source in this scenario is strong, it is unlikely that an extremely high dose was received by the two officers after handling the caesium source for a short time. It should be considered that the symptoms experienced by the officers might have been caused by fear once they found out they have been handling a radioactive object. It is, however, important to note that the handling time is purposedly not specified in order to allow the trainer to develop the scenario based on the interactions with the trainees.  The trainer should inform the trainees that conventional triage methodology is applied in this scenario. However, when the number of victims is low, such as in this case, FRs would treat each victim immediately without a real need for triage. Therefore, conventional triage is part of this scenario discussion for the sole purpose of exercising and reviewing triage methodologies.  The first responders, informed of the high radiation level, should have arrived well equipped to avoid inhalation or ingestion of Cs-137 and reduce the handling time to a minimum, before sealing the source.  Law enforcement officers should work to determine who needed the radioactive material and why. There is a high chance that this is a crime situation.  Sources:  Based on the Saryagash customs post incident (Sary-Agash, Kazakhstan), 25/08/2014. https://www.nti.org/analysis/articles/cns-global-incidents-and-trafficking-database  https://www.cdc.gov/nceh/radiation/emergencies/isotopes/cesium.htm  https://remm.hhs.gov/doseattenuation.htm#cesiumrod | |
| **Application: First alarm (Topic 4.1)**  **Target audience: DO, FB, (M)P, AS** | **Learning objective:** To recognize signs of a potential CBRN release and (initiate first) respond(ers).  **Aim:** The dispatch officer interacts with the caller to identify the likelihood of a possible CBRN release and to know which information should be shared with the chain of command. Use of METHANE and Four W’s protocols. |
| Example: |  |
| **Application: Arrival on scene (Topic 5.1)**  **Target audience: FB, (M)P, AS** | **Learning objective:** To recognize how to carry out an on-site risk assessment, zoning of the area, and isolation and registration of victims.  **Aim:** The first responders arrive on scene, perform a risk assessment, talk with the caller, perform a reconnaissance of the incident scene and discuss actions. They apply METHANE, establish zoning, isolate people and pet animals, initiate evacuation, register persons. |
| **Example:** |  |
| **Application: Forensic awareness (topic 5.2)**  **Target audience: FB, (M)P, AS, EMS, GP** | **Learning objective:** To recognize how to carry out your work without forensic disruption of the scene.  **Aim**: The responders discuss the possible forensic value of the materials found on the scene and preserve the evidence. |
| **Example:** |  |
| **Application: medical treatment and triage (topic 5.6)**  **Target audience: FB, (M)P, AS, EMS, GP** | **Learning objective:** To recognize how to apply appropriate medical care towards patients involved in a CBRN incident.  **Aim:** The responders assess the medical conditions of the victims, perform triage on the victims and recommend possible treatment. |
| **Example:** |  |
| **Application: Alarm Protocol (topic 6.1)**  **Target audience: DO** | **Learning objective:** To differentiate a possible CBRN incident (from normal incident) and to carry out appropriate procedures & protocols.  **Aim:** The dispatch officer interacts with the caller and relays necessary information to the responders moving towards the scene. |
| **Example:** |  |