## Scenario 7-R: Barrels found during maintenance work

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| **Scenario 7-R: Barrels found during maintenance work** | |
| **Complexity of the scenario: moderate** | |
| **Possible application of the scenario: Topics 4.1, 5.1, 5.2, 5.6 and 6.1** | |
| **Scenario description:** | |
| A picture containing indoor, elevator, floor, steel  Description automatically generatedDuring scheduled maintenance work in a factory that belonged to a company that manufactured china sanitaryware, two workers entered an abandoned storage facility of the building to remove the content and clean it, leaving the door open. The workers’ operations and the air flow through the open door caused a lot of dust to resuspend and fill the room.  While working in the room, the workers found three barrels painted with radioactive pictograms. The barrels seemed very old and looked like they had been forgotten in the storage room for many years. One of the barrels was broken, completely rusted and the lid was open. Scared by the signs on the barrels and their condition, and since they were not wearing protective clothing, the workers rush out leaving the storage room as they found it and one of them makes the emergency call. During the emergency call, one of the workers starts to experience chest pain.  A picture containing cup  Description automatically generated  **Things to consider:** In this scenario, an important aspect to be considered is that, in the 1950s, insoluble uranium compounds were legally used in the production of ceramics. The barrels might therefore contain uranium compounds in insoluble form and have been supposedly stored in the facility for decades. Moreover, although the barrels were probably filled with lead surrounding the uranium, one of the barrels presents signs that could indicate a possible breach in the containment of radioactivity and a potential consequent internal exposure from inhalation or ingestion also due to the presence of large quantities of dust in the room while no specific personal protection equipment was worn by the workers. The most important risk is inhalation of dust which mainly gives a lung dose because these particles can remain in the lungs for a long time. Dermal exposures to uranium are generally not significant as most uranium isotopes emit alpha particles, however due to the long time passed since the barrels were stored, the radioactive daughters created by the decay of uranium will have formed and there will also be beta radiation.  The symptoms experienced during the call could have also been caused by the fear of radiation exposure felt by the worker. However, they should not be discarded, and the workers’ health must be monitored for the insurgent of other symptoms that take a longer time to develop, such as blood in the urine caused by kidney damage.  The first responders, informed of the finding, should arrive equipped to avoid inhalation or ingestion of the dust in the room.  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.  Sources:  https://www.nti.org/analysis/articles/cns-global-incidents-and-trafficking-database  https://web.evs.anl.gov/uranium/guide/ucompound/health/index.cfm  https://www.atsdr.cdc.gov/csem/uranium/physiological\_effects.html  https://www.nrc.gov/docs/ML0900/ML090070576.pdf | |
| **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:** |  |