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Module 2: The Fukushima Daiichi Disaster – Misunderstandings and Common
Misperceptions Must be Mitigated by Emergency Managers

MPDM-720-101: Public Health Emergency Management

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There is not currently a public health issue related to the radiation from the Fukushima Daiichi nuclear power plant disaster, and it is highly unlikely that there ever will be one. (Nomura, 2016). I am an emergency manager for the US Navy, responsible for the radiological emergency planning for all nuclear submarines and aircraft carriers homeported in the State of California. In the highly unlikely event of a nuclear accident in one of our Navy vessels, I am the person charged with understanding this event, validating effective actions, and communicating recommendations for protective actions to State and local officials and the public.

There is a massive bias toward valuing uneducated opinions (which are often just sensational guesses) whenever radiation is involved, and the idea that there is a public health crisis every time radiation is released to the environment. In fact, I could provide many positive perspectives on radiation that we experience daily in our regular lives that would probably surprise many people. There is no current global impact of the leak in Japan. The only local impacts are displacement of populations, out of an abundance of caution, and of course the loss of the reactor site and general malaise of the energy industry in Japan. There have been some mental health effects shown to exist that stem from the trauma of the entire event; these should not be discounted and should be dealt with appropriately. However, should Japan release water from the reactors and spent fuel pool cooling water storage tanks as planned, in a filtered and monitored fashion, there will be no impact of any significance, either locally, or globally. Tritium is one of the radioactive isotopes of least concern, and the fish and wildlife in the area will not be affected by the levels of radioactivity released; it is negligible.

However. There are still significant concerns with the ongoing administration of this disaster site, and administration of power plants in Japan at large. The data that we have to base conclusions on comes from the Tokyo Electric Power Company (TEPCO). Experience has shown that placing a high amount of trust in them can be a mistake, and no one is really able to get close enough to the specific disaster area to actually get good readings without the instruments going off scale or experiencing failure. There is massive radiation in the meltdown areas that will take decades to contain effectively. In fact, in the months leading up to and during the disaster TEPCO was found to be underreporting problems and misrepresenting situations to government officials and regulators. It is difficult to determine why this was accepted for so long by the government but the state of affairs in Japan is still one of mistrust and dubious information. So when we hear that radioactivity will be released to the environment, in very low levels and with monitored filtration, it calls into question if the problem is worse than advertised, and we must enact good watchdog and secondary monitoring programs by the public. Should TEPCO accidentally release fission products such as Cesium or Rubidium to the environment in large quantities, then it is possibly a different scenario.

While no amount of radioactivity can be deemed 100 percent safe, when biases are removed and when viewed in perspective to the risks associated with many other chemical compounds or activities, we can see that while the situation in Japan is far from ideal, it is not the impending doomsday scenario the press would have us believe.

If there is a reactor accident, and a release to the environment occurs, the most important aspect of the response for public safety is during the plume phase. If data can be effectively obtained immediately to determine if there is radio iodine present, and how much, you will be able to determine if there is a clear and present danger to the public, and how far within the emergency planning zone that action will be needed. If the public is in real danger, the Environmental Protection Agency has created the Protective Action Guidelines, or PAGs, that can be used to notify affected populations. Most importantly, we have learned from both Three Mile Island and Fukushima that evacuations do more harm than good if the PAG thresholds are not met. Specifically, it was found that experiencing the disaster did not have a significant impact on mortality, but the mortality rate for evacuees versus non-evacuees was 1.82 times higher. (Nomura et al, 2016). The deaths associated with evacuations around Fukushima will in time be seen as the main problem from this disaster, not the radioactivity. The idea of evacuating the City of Tokyo was discussed during this disaster. Imagine the logistical nightmare of evacuating such a place. Where do you go? Where do you house the elderly, infirm, and hospitalized? How can you move that many people in a place that relies on trains and subways for most daily transportation? Thankfully the right decision was made to ask residents to shelter in place, and Tokyo was not a mass casualty location, as it would have been if an evacuation order was issued.

The lessons learned from this disaster were some of the most important in the history of the industry. Taking preparedness for granted without adequate questioning and validation of the resilience, reliability, and redundancy of safety

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systems can not be tolerated. Here in the United States the Nuclear Regulatory Commission (NRC) updated requirements accordingly. (NRC, 2020). The US Navy updated many requirements as well for what was considered an independent back up power source and how many were required at all times. Additionally, practicing public messaging with state and local partners, to include reality versus perceived consequences based on long held mistrust and biases (in contrast to the approach used by TEPCO and the Japanese government) is the necessary work that will save lives and provide correct perspective when disaster strikes. During the Three-Mile Island meltdown press conference, with the Governor on stage with the NRC, the Governor publicly stated information contrary to what the NRC had stated, and that he had lost confidence in the NRC's ability to manage the response. This kind of gap is what erodes public trust, and speaking as one voice with confidence in the joint monitoring and resultant risk factors will help to mitigate and hopefully quell public concern to a manageable level.

In the middle east, where Iran once again was not allowing IAEA inspectors to validate the status of their reactors and potential weapons grade plutonium breeding programs, we can see that continued mistrust worldwide is both a problem of perception for Iran and a potential problem of safety for their neighbors. Although Iran has now agreed to allow filming in their key areas by the IAEA, these periods of non-compliance without censure throw doubt onto the program's administration and the industry in any emerging nuclear nation. (Murphy, 2021). These problems will continue to exist, as less developed countries look for ways to gain a foothold in the global power structure. Iran is the country of interest today,

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tomorrow it could be Afghanistan or any number of other nations. Emergency preparedness programs are only as good as the information that informs them and the trust that the public has associated with these programs. Without transparency and trust, we will always be in a reactive mode and be cleaning up billion dollar messes. Hopefully these messes continue to remain where they are created, and do not fall into the wrong hands and make their way into the back yards of nations that have been responsibly handling nuclear materials for decades.

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