Let's Take a (RE)PEEK at the PEAC Software

A Review of Last Month's Example

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Last month's example using Hydrogen Fluoride

We'd like to address some questions that arose with last month's example using Anhydrous Hydrogen Fluoride (sometimes referred to as AHF). AristaTek had some calls asking why they weren't getting the same downwind exclusion zone or Protective Action Distance (PAD) as shown in the example. The problem usually was the time the computer was set for when they ran the example. From last month's example part of the scenario was "One clear evening about mid-night in mid-August…" Unless you work the graveyard shift and the actual current time is around the middle of the night, then you need to reset your current time on either your computer or your Pocket PC (PDA) to around midnight. The PEAC system uses the current date, time, specified location and cloud cover to calculate incident radiation. The incident radiation is used to calculate the atmospheric stability and evaporation rates if a liquid pool is formed.

The incident radiation with daytime conditions is obviously much higher than at midnight, this results in greater ground surface heating, which will lead to greater turbulence and will result in much faster mixing of surrounding air into a toxic vapor cloud which all means the toxic vapor cloud will disperse quicker. The net result is a shorter PAD than compared to a nighttime release. This can also be seen if you review the US DOT Emergency Response Guidebook's (ERG2000) "green pages" that provide Initial Isolation and Protective Actions Distances for small and large spills, both daytime and nighttime conditions. For a large spill of AHF the daytime PAD distance is 0.3 mile and the nighttime PAD distance is 1.4 mile. In development of the ERG2000, US DOT modeling also took into account the differences in stability between daytime and nighttime conditions and the affects on how fast the vapor cloud will disperse. Other dispersion models when looking at daytime vs. nighttime conditions will display similar results.

The bottom line in all this discussion is two-fold:

First – toxic vapor clouds created in stable conditions (nighttime) are usually going to disperse slower and extend over longer distances, so keep that in mind.

Second – the PEAC system is dynamic, using all the information available, e.g., current location, time, date, and cloud cover, to provide the best prediction to the responder.

Another issue that arose in the August example is that some users have the Windows version of the software and some have the Pocket PC (PDA) version and the data display screens aren't quite the same. For that we apologize and will try to provide examples of both screens in the future. At least for the data display screens, the PAD calculator or Explosion Calculator screens are very similar in the Windows and Pocket PC versions.