



## THE CUBICAL

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### Process Safety's Latest Frontiers: Natural Hazards and Power Outages



On August 21, 2022, a proposed rule to amend EPA's Risk Management Plan (RMP) Rule was published in the Federal Register. One of the most interesting aspects of this proposal - known as the Safer Communities by Chemical Accident Prevention (SCCAP) proposed rule - is the focus on natural hazards and power loss. Under the SCCAP Proposed Rule, a regulated facility would be required to consider natural hazards when conducting a process hazard evaluation. In addition, a regulated facility would also be required to consider how standby or emergency systems might be utilized to prevent or minimize the negative impacts associated with the loss of the facility's primary source of power.

These issues have not had prominent roles in prior efforts to amend the RMP Rule. Thus, this raises the question as to why they would assume such a prominent role now. The answer can be found in two key words in the preamble and proposed text - *climate change*. EPA notes that recent studies indicate that the threat of natural hazards is increasing due to climate change. As a result, "actions to ensure natural hazards are evaluated and properly managed are critical." In addition, while a loss of power can result from any one of a number of causes, EPA cited a report by the U.S. Department of Energy that "an increase in extreme weather events has led to an increase in power outages in recent years" in support of requirements to consider standby or emergency power systems when conducting process hazard evaluations.

While it remains to be seen how these issues are addressed in a final rule, it

appears likely that a requirement to address natural hazards and power loss will survive in some form. With this in mind, regulated facilities can prepare for these likely changes as follows:

- According to EPA, the current RMP Rule already requires regulated facilities to consider natural hazards and power loss when conducting their respective process hazard evaluations. In EPA's view, the natural hazard and power loss provisions in the Proposed Rule mainly clarify requirements that already exist. And in fact, in the preamble to the Proposed Rule, EPA refers to these changes as "amplifications" to the hazard evaluation requirements. For this reason, regulated facilities should evaluate whether natural hazards and power loss receive appropriate consideration in their existing RMP programs. In addition, they should be cognizant of the possibility of EPA pursuing enforcement actions for failure to adequately factor these considerations into existing RMP programs.
- Property insurers can be valuable resources when it comes to ensuring process safety in the face of natural hazards and power loss. In recent years, the world's largest property insurers have devoted considerable resources to understanding the impacts of climate change on natural hazards. They have also developed a wealth of guidance on actions that can be taken to be prepared for the likelihood of an increase in the intensity and frequency of severe weather events resulting from a warming planet. Finally, engineering surveys conducted by property insurers can be a valuable resource for guidance on actions that can be taken to protect a facility's processes from the impacts of natural hazards and power loss.
- Facilities should be prepared for the possibility of "knock-on effects" resulting from EPA's focus on power loss in the SCCAP Proposed Rule. The transmission and distribution systems that supply power to manufacturing facilities can be complex, and at times challenging. A troublesome substation can wreak havoc on the continuity of a facility's operations, thus resulting in multiple instances of exceedances of emissions limitations. In recent years, EPA has significantly ratcheted down the availability of affirmative defenses for permit violations due to startups, shutdowns, and malfunctions. These events are often the result of a loss of primary power. With the focus on power loss in the SCCAP Proposed Rule, EPA may more aggressively pursue violations due to repeated instances of power loss events.

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## SCCAP Expands RAGAGEP's Role

Under the SCCAP Proposed Rule, the role of *RAGAGEP* has expanded. *RAGAGEP* is the acronym for *recognized and generally accepted good engineering practices*. *RAGAGEP* consists of the codes, standards, and practices adopted by specific industries for the safe design, operation, and maintenance of equipment, unit operations, and processes. The RMP Rule requires compliance with *RAGAGEP* in several areas. For example, inspection and testing procedures in RMP programs for certain covered higher-hazard facilities must comply with *RAGAGEP*. (For a more general discussion of *RAGAGEP*, see *What is RAGAGEP? And Why Is It Important?* in the August 2022 edition of *The Cubical*. This edition can be accessed by clicking [here](#).)

In the Proposed Rule, RAGAGEP's role has expanded as follows:

- Historically, RAGAGEP featured most prominently in the requirements for higher-hazard Program 3 facilities. In the Proposed Rule, it takes on a greater role for moderate-hazard Program 2 facilities. The clearest example of this can be found in the requirements for documentation of process safety information. Under the current RMP Rule, Program 3 facilities are required to document that equipment covered by the Rule complies with RAGAGEP. Under the Proposed Rule, Program 2 facilities would be required to meet the same requirement.
- RAGAGEP also assumes a greater role when it comes to detecting releases. In the preamble to the Proposed Rule, EPA states facilities are expected "to identify the most effective method of detecting releases of their specific substances, from their specific process operations, based on RAGAGEP."
- In the SCCAP Proposed Rule, EPA tackles the issue of obsolete industry codes. The Proposed Rule requires a process hazard analysis (PHA) to include an analysis of the most recently promulgated RAGAGEP in order to identify any gaps with current facility practices. Interestingly, EPA seems to have justified this provision - at least in part - on its belief that compliance with the most recent version of RAGAGEP is already required in the General Duty Clause (GDC) of the Chemical Accident Prevention statute. In EPA's view, this provision is needed to prevent facilities that are only subject to the GDC from being subject to more stringent requirements than facilities subject to the RMP Rule.

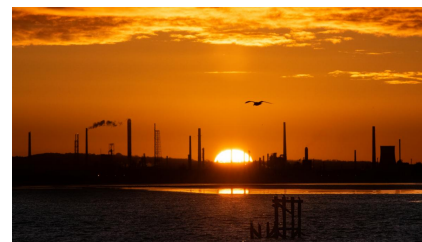
This last point is particularly important because it echoes a theme from the previous article on natural hazards and power loss. Namely, EPA seems to believe that it already possesses the authority to enforce a number of the provisions of the SCCAP Proposed Rule. In some instances, this belief appears to be based on EPA's interpretation of the provisions of the existing RMP Rule. In other instances, it appears to be based on EPA's interpretation of the scope of its authority under the GDC. In either case, environmental professionals and operating managers should be aware of this possibility.

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## Finding Balance *Again*: Is It as Easy as 1,2,3?

Recently, I attended a conference where a speaker remarked - almost in passing - about how easy it is to get confused by references to Scope 1, Scope 2, and Scope 3 emissions in the multitude of guidance documents on greenhouse gas (GHG) measurement, reporting and disclosures. The speaker was right. It can all be very confusing; not to mention frustrating.

However, this confusion and frustration can at least be partly alleviated with a recognition that these references merely describe specific applications of a process that chemical engineers deal with on a regular basis. That process is the process of *defining the system* that is being analyzed.



Typically, the first exposure chemical engineering students get to their designated major is a course on analyzing mass and energy balances. One of the key skills they

learn is how to define the system whose balances are to be analyzed. A system can be a single piece of equipment, a process unit, an operating facility, or even an entire business. Once the system is defined, a box can be drawn around it, and the real work of balancing the mass and energy flowing into and out of the system can begin.

Similarly, one can conceptualize the emission scopes described in GHG guidance documents - such as those issued under the banner of the GHG Protocol or EPA's Center for Corporate Climate Leadership - by drawing boxes around the emissions scopes, or *systems*, described in these publications. In the case of Scope 1 emissions, this can be as simple as drawing a box around one or more of an organization's manufacturing facilities. For Scope 2 emissions, this box can be expanded to include all or part of the utility operations that supply power to the organization's manufacturing facilities. For Scope 3 emissions, the box can be expanded even further to include an organization's transportation fleets, pipeline networks, and the manufacturing facilities of suppliers and customers.

Once these boxes are drawn, one can begin to gain a conceptual understanding of an organization's GHG emissions by relying on another key concept that students in a mass and energy balance class learn: *For steady state systems, whatever goes in must come out*. This concept - while fundamental, and perhaps even intuitive - is important because ultimately, GHG emissions are a critical part of the system's mass balances and are also directly related to the system's energy balances. It can be applied to carbon atoms, nitrogen atoms, or BTUs of energy. (See the article entitled *New Administration Readiness Check-up: Finding Balance* from the Inaugural Edition of *The Cubical*. The full article can be accessed by clicking [here](#).)

An understanding of these basic concepts does not necessarily arm one with the tools necessary to measure and analyze an organization's GHG emissions in detail. However, such an understanding can make it easier to keep up when discussions about an organization's GHG emissions turns to deeper topics such as which carbon-containing molecules should be counted, or which customers or vendors should be included in an organization's Scope 3 emissions.

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