

INSIGHTS

NAS Recognizes Utility of Performance Based Rules

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In October 2017, the National Academy of Sciences (NAS) issued a pre-publication report on “[Designing Safety Standards for High Hazard Industries](#).” Sponsored by PHMSA (and many years in the making), the Report focuses on oil and gas pipelines and the regulatory scheme used by the Pipeline and Hazardous Materials Safety Administration (PHMSA). Noting the differences between prescriptive and performance based rulemakings, the Report observes that while most federal agencies use a combination of both, PHMSA is one of the few federal agencies that primarily relies on performance based standards. The rationale used by PHMSA, the Report notes, is that pipeline integrity management is best maintained by placing responsibility on individual operators to identify and manage risks that may not be known to the regulators or common to the industry. (Report, p. viii).

The NAS Report observes that prescriptive regulations are generally more “micro” in focus, while performance based regulations are “macro,” noting that performance based “macro” regulations focus on the ends rather than the means of regulating safety. The Report also notes that the term “safety culture” became common after the 1986 Chernobyl nuclear accident, stating that a strong safety culture comes from shared attitudes and values, processes engineered into complex systems, and daily communication with the work force about common goals. (Report, p. 11).

The Report makes several interesting and practical observations, such as “accidents are a normal feature of complex technologies” that cannot be completely eradicated or predicted, but that can be reduced and managed through system management. (Report Box 1-1). It also notes that an agency with a small inspection staff (like PHMSA) can be put to better effect by reviewing system/performance records, “instead of trying to verify that hundreds of firms are complying with numerous detailed requirements” (Report, p. 12). NAS notes that the goal in these types of situations is to “reduce the occurrence of low frequency, high consequence events” (Report, p. 13), and that in taking that approach an agency using performance based rules may “decide to subject firms with a record of consistent compliance to less intense enforcement activity” (Report, p. 14).

The use of the term “performance based regulation” has yielded a variety of definitions by both government agencies and the regulated community. One of the goals of this NAS study is to help provide conceptual clarity of the term. The Report concludes with the general observation that performance based/macro regulations offer the potential for more flexibility, both by the agency and the regulated entity.

Although not addressed in the Report, recent disclosures of falsified testing data by a Japanese steel manufacturer (producing steel parts used primarily in the auto industry) illustrate how prescriptive and performance regulations may best find safety issues upon learning that component parts may not be as certified. In a strict prescriptive system, where a steel component may be ascribed a “life of part” designation, there would be no means to verify the risk other than the conservative presumptions built into the design life rule. In a performance based system, on the other hand, there would be several layers of ongoing inspection and testing that would constantly verify the quality of a given component. For oil and gas pipelines, if the steel had a prescribed life, information about falsified construction data would create considerable concerns about safety. If the same steel was subject to performance based regulation, however, it would be subject to continual evaluation by various means (hydrostatic tests, in line testing, cathodic protection, etc.).

PHMSA is not the only agency that primarily relies on performance based rules; the Nuclear Regulatory Commission and the Bureau of Safety and Environmental Enforcement (BSEE, which is discussed throughout the report, regulates offshore pipelines) also regulate through performance based regulatory schemes. The Report provides several considerations for regulations in structuring a “macro-means” (or performance based) regulatory scheme, many of which are already inherent in PHMSA’s regulations and enforcement protocols. For example, the Report suggests that a regulator “assure a strong connection between what a firm’s management plan calls for and what actually happens at a complex facility.” PHMSA already addresses this issue, given that the regulations set a minimum standard that operators are expected to exceed and because operator’s plans become enforceable regulations under the PHMSA regulations.

Despite efforts under the prior presidential administration to focus on increased prescriptive pipeline safety regulations, new PHMSA leadership have expressed a renewed commitment to performance based pipeline safety standards and technological innovation. Recently appointed PHMSA Deputy Administrator (and Acting Administrator until Skip Elliott takes the helm), Drue Pearce, [highlighted](#) continued support for “the least prescriptive possible” regulations to ensure that the rules are “flexible enough to be able to accept new technologies and new ways of doing things that are safer” (Daily Gas Report, Vol. 11 Issue 190, Oct. 4, 2017). During his Senate confirmation hearing, newly confirmed PHMSA Administrator Skip Elliott [committed](#) to “exploring how technology can be deployed in other ways to enhance safety on pipelines and other forms of transportation” and “seeking to encourage research and development efforts that will create and apply new and cutting-edge technology and automation to safety solutions.” He also signaled that pending rulemakings from the Obama administration may be segregated, “We have to basically peel back each individual regulation and find those [provisions] that deliver the greatest safety measures to the public ... and work to get those regulations in place.” Meanwhile, PHMSA Deputy Administrator for Field Safety Linda Daugherty [noted](#) last month that “now is a time for innovation” and that responding to recent executive orders is about “changing our regulations;” “Making them less burdensome. Making the focus on safety” (E&E, Changes across the flowchart at PHMSA, Sep. 27, 2017).

Overall, although performance based regulations can be challenging for operators to implement and for agencies to enforce, the conclusions in this report acknowledge the utility of a performance based regulatory approach.