The growth of industry and, as a result, the economy are dependent on technology advances and innovations. However, these same activities often lead to more complex processes, especially in the chemical industry, which is using comparatively severe operating conditions (temperature, pressure, flow rate, etc.), more reactive chemicals, and exotic chemistry. These more complex processes require in-depth analysis and knowledge of process chemistry and hazards. It is even more important now to design the process and equipment to precise standards based on a complete understanding of the underlying hazards, process chemistry, and the impact of operating conditions. Recently, much attention has been paid to human factors and its impact on chemical plant incidents. However, one can also say that process knowledge and understanding is the most human factor. This is based on the concept that inadequate knowledge, information, and understanding of the process hazards, chemistry, and impact of operating conditions are the root cause of many process plant incidents.

Managing safety is no easy task, but it makes bottom-line sense. There is a direct payoff in savings on a company’s workers’ compensation insurance, whose premiums are partly based on the number of claims paid for job injuries [1]. The indirect benefits are far larger, for safe plants tend to be well run in general and more productive. The recipe for safety is remarkably consistent from industry to industry. It starts with sustained support of top management followed by implementation of appropriate programs and practices that institutionalize safety as a culture as compared to add-on procedures. The ingraining of safety as second nature in day-to-day activities requires a paradigm shift and can only be accomplished when safety is viewed as an integral and comprehensive part of any activity as compared to being a stand-alone or add-on activity.