Building Safety into Your Products to Gain a Competitive Edge and Protect Your Brand

Just because your product is legally compliant does not mean it is safe. Over a thousand consumer products, with total quantities of over 50 million units, are recalled from the US market each year because they are considered unsafe or violate safety standards. The estimated cost to consumer products companies? Over $6 billion a year; not including the related PR damage to the company's brand and loss of sales. Many of these safety defects could have been identified and prevented during product design and development. The bottom line: Companies with "best practices" in place have sharply lowered recall rates and gain a major competitive advantage.

In today's litigious environment, meeting legal regulations is not always sufficient to protect against product failures or design defects. Many safety defects that lead to recalls or liability claims can be anticipated and prevented during product design and development by implementing best practices in product safety and quality. As a product safety manager, recruiting more active participation from all departments during product development results in significant cost savings by ensuring quality and safety are built into the product – reducing complaints, product returns, injuries and lawsuits down the road. Designing a safe, quality product the first time also yields faster time to market by eliminating costly redesigns or rework once production has already started.

At the most basic level, a legal compliance review ensures a product complies with any legal regulations that exist for that product type. However, legal compliance reviews will not identify all hazards for all products. Many products do not have legal requirements or even voluntary standards written for them. Even if standards exist, many of the standards are "reactive", meaning they are changed only when a problem occurs in the market. You do not want to be the company that creates the need for a new standard!

Product Risk Assessments can be performed when more information is needed about potential hazards that may exist in a product. Reviews of this type can be done at any stage of the product development process, including concept or prototype stages. While risk assessments have been common in certain industries for some time (aerospace, nuclear, etc.), they are just now beginning to be considered in the consumer product industry; especially for children's products.

Effective risk assessments for consumer products apply a variety of processes including Design Failure Modes Effect Analysis (DFMEA), Data Analysis, Foreseeable Use Analysis, and Hazards Analysis as the primary research tools. These tools should be applied at every stage of the development cycle from Concept through actual production. A summary of these key processes is provided below:

- Design Failure Modes Effect Analysis (DFMEA) have been used for decades in many industries ranging from Software Design to Banking to Manufacturing. They use a systematic method of identifying and preventing product and process problems before they occur by investigating all of the ways a product or process could potentially fail and understanding what happens if it does fail. While best used during product design or process development, DFMEA can also be used on existing products and processes.
- Data Analysis is a tool that can be used to learn from events that have already occurred or from information that has already been collected. Data analysis conducted for a product can identify past mistakes made by companies, how consumers use products and quality expectations of consumers. Sources of data include recalls (US and foreign), CPSC injury databases (e.g. NEISS), internal consumer complaint data, and consumer research studies.
- Foreseeable Use Analysis must focus on all potential uses and "misuses" to understand potential risks. Even if a consumer is injured while misusing a product, the burden is

placed on the manufacturer if that misuse could have been foreseen and designed around. Foreseeable Uses can almost always be predicted (using FMEAs and other tools), although some uses of new or complex products can be difficult to predict.

- Hazards Analysis is the final step of evaluation for specific hazards of a given product. While some hazards are identified in legal requirements and standards, it is important to broaden the range of hazards being considered to fully assess a product. Categories of hazards include, but are not limited to, Asphyxiation (e.g. suffocation, strangulation, airway obstruction, etc.), Kinetic Injury (e.g. impacts, falls, explosion, etc.), Mechanical (e.g. laceration, puncture, entrapment, etc.), Radiation (e.g. light exposure, UV light, etc.), Thermal (cold and hot), Electrical (shock, fire) and Chemical (toxicity, chemical burns, etc.).

Once identified, potential hazards can be classified based on their risk characteristics to generate design recommendations that may reduce the product's overall risk to a consumer. These hazards can then either be designed out of the product, safeguarded against (using protective caps or other features), warned against with labels and instruction or simply accepted as part of the acceptable risk of a given product.

Brand Protection starts with safe product designs. Legal compliance, quality, performance and consumer satisfaction are imperative to a brand's reputation. Building these into a product from the very concept using the most effective tools available is the best way to prevent expensive recalls or litigation and will give your company a competitive edge in today's market.

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