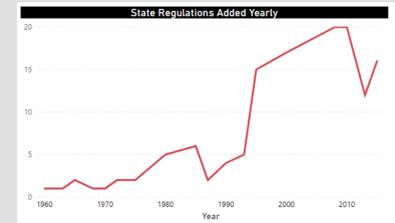


Implementing Data Visualization for Real-Time Hazard Communication and Chemical Management

Authors: Richelle Romanchik, Christina Clements, and Beth Dederick, ERM

Global Regulation and Real-Time Tracking

Data visualization is an effective tool to show compliance with regulations, nationally and internationally. As demonstrated here, interactive maps can identify sites that are compliant, and sites that need focused efforts to come into compliance. Dashboards can depict worker exposure, OSHA incidence, and audit data.

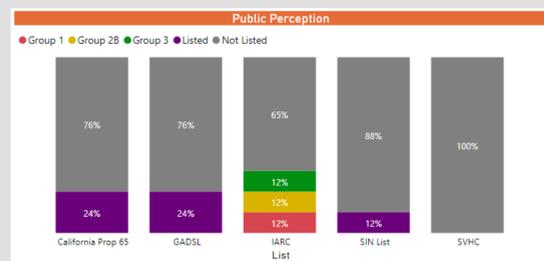
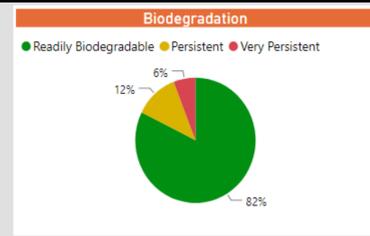


Regulations are constantly evolving and are increasingly difficult for companies to track. A key aspect of data visualization is its ability to allow fast interpretation of data as it changes over time. For instance, substances of concern can be identified early, allowing for early identification and hazard assessment of replacements.

Dashboards can be expanded beyond one country, allowing tracking across multiple jurisdictions, easily tracking disparate and emerging regulations, as well as new markets. This aspect of data visualization can be optimized and personalized for companies as their business needs change and they must adapt to new market requirements.

Consumer Perception

A great way to track consumer perception of a product and its components is through NGO lists. The dashboard below can be adapted to fit different markets, such as GADSL for the auto industry, or EWG for consumer products, allowing a variety of options for decision makers to track relevant public interest, from biodegradability to toxicity of products and components.



Data visualization provides the tools for red flag reviews across a full Life Cycle Assessment. As the market and public influence changes, the data model can be automatically updated and refreshed. This tracking capability gives decision makers up to date information as perception shifts over time.

ABSTRACT

In an ever-changing landscape of chemical regulations and product development, arming decision makers with real-time information in an intuitive and accessible format is key to enabling data-driven business and product stewardship decisions. This poster will demonstrate the value of implementing a management dashboard to improve hazard communication, chemical management and evaluation of risk by providing interactive data to a range of people, from workers in a manufacturing plant to senior executives at a Fortune 500 company. Worker and consumer hazards can be visualized by gathering data from a simple life cycle assessment of components, and a full review of the product trail, from raw material to final products. Interactive dashboards facilitate tracking of watch lists (government, industry and non-governmental organizations) and emerging regulations, and support compliance in the US and international markets. Dashboards can be easily updated to provide timely information on complex topics in an intuitive format. Management dashboards provide EHS workers, product stewards and senior leadership the ability to monitor the hazards of and exposures to chemical substances, thus enabling timely hazard communication.

Worker Exposure

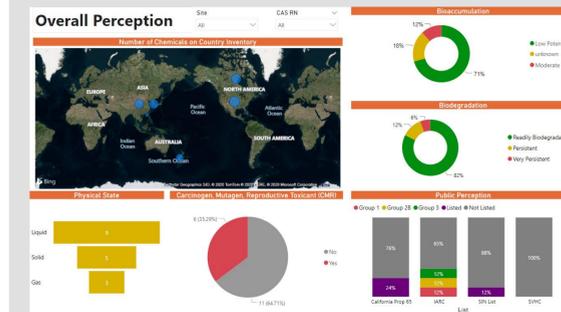
Hazard profile tools allow instant visualization of the hazards in a product, allowing workers and managers to assess control needs for worker safety. The profile of the product's raw materials below indicates potential worker hazards and exposures as products are developed, allowing for fast trouble-shooting.



Worker exposure is a topic of concern for many companies. Data visualization interprets information from enterprise digital platforms simultaneously, creating an interface that is easily interpretable. Interactive dashboards indicate where data gaps exist, allowing for focused efforts to correct issues proactively. As shown above, exposure levels can be compared, and these data in combination with worker exposure and audit data, as well as incidence reports, can illustrate a more comprehensive picture of potential risk.

Illustrating the Full Picture

Combining all of the aspects of data visualization, a "dashboard" can be created. This dashboard is easily interpretable, is able to refresh automatically, with little effort, and enables interaction with the data, regardless of skill level or knowledge base. Illustrating the full picture allows experts to capture critical details and management to make key business decisions.



Data visualization can provide the "AHA! Moment" that is needed to convey information across an organization. It is intuitive and can aid in communication of hazard communication, chemical management and decision-making. Risk management is a large part of the big picture, and data visualization takes it one step further, illustrating data gaps and high risks throughout the life cycle.

Conclusions

In conclusion, data visualization can be an invaluable tool, allowing real-time tracking and dissemination of hazard information across an organization. This tool gives users the ability to interpret, connect, and dive deep into data in new ways. It can be done on multiple platforms, pulling in disparate datasets when done correctly. Appropriate hazard communication and identification of data gaps throughout the life of a chemical is key to having smooth operations, especially as national and international regulations become more complex and intertwined. In today's high-tech society where decision makers must react quickly, interactive bar charts, pie charts, and maps contribute more than numbers, tables, and spreadsheets alone. Data visualization allows for quick decision making and timely communication to all appropriate stakeholders.

**All information in this poster is publically available information. All images were created by the author.
© Copyright 2020 by ERM Worldwide Group. All Rights Reserved. No part of this work may be reproduced or transmitted in any form or by any means, without prior written permission of ERM.

