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PRODUCT SAFETY STEWARDSHIP AND RISK ASSESSMENT	PAGE:	1 OF 5

Attachment 1: Prioritization of Existing Products as of 2014

During the second and third quarters of 2014 ASHTA put a process in place to prioritize products to identify those products that require a more detailed evaluation, assessment, and risk management controls, and that require additional data and information gathering. In keeping with the ACC RC Product Safety Code, ASHTA applied a science- and risk-based approach, considering hazard, intended uses and exposure potential to not only trained industry work force, but the impact on the general public from use, misuse, transportation incidents and security risks, when prioritizing the products.

The company's criteria were applied uniformly to all current products and incorporated relevant, credible current regulation and scientific advances deemed to be RAGAGEP as captured in regulatory or non-governmental standards. Web searches were performed to consider any significant new information to ensure that prioritization decisions were current. Critical nationwide and industry wide initiatives such as the ongoing TSCA inventory proposals, and chemical security initiatives were weighed heavily as valid indicators of the potential impact of ASHTA products on the safety and well-being of public stakeholders.

The results of the review of recognized regulatory and statutory standards are summarized in Table 1 below. The first column reflects the level of concern shown by the Department of Homeland Security through their implementation of the Chemical Facility Anti-Terrorist Standard. Only those chemical substances with the ability to produce widespread impact in the form of public casualties are deemed to be Chemicals of Interest (COI). As is noted below both Chlorine and Chloropicrin meet those criteria and are controlled. The specific issues and scenarios involved are not presented here due to regulatory Chemical Vulnerability Information (CVI) control issues but are available for review in the site's current Site Vulnerability Assessment (SVA) for personnel with the appropriate CVI clearance and a valid need to know.

The second column similarly reflects the concerns of widespread casualties due to theft or diversion as regulated by the Transportation Safety Administration (TSA) and reflects those chemicals produced by ASHTA that require chain of custody control and documentation, real time location reporting, and continuous physical security. TSA deems those materials to be Rail Security Sensitive Materials (RSSM) and that includes our current products Chlorine and Chloropicrin.

Of the many toxic chemicals utilized in industry some are deemed to be so toxic as to have levels of concentration that are considered to be Immediately Dangerous to Life and Health (IDLH). Those levels are determined through testing. The values representing IDLH concentrations as published by the internationally recognized National Institute for Occupational Safety and Health (NIOSH) are shown in column three.

In addition to the relative amount of the product required to produce an IDLH atmosphere, the rate at which the product actually releases also affects the impact on the public and the environment. This is especially on point as one product, chlorine, is a pressurized liquid as shipped, and two products, Chloropicrin and Hydrochloric acid are fuming liquids that vaporize into the air. A RAGAGEP source for evaluating these affects is the guidance in the Emergency Response Guidebook (edition 2012) published by the U.S. Department of Transportation in conjunction with the Canadian Department of Transportation. Chemicals with the most severe rates of vaporization require prompt action to establish initial isolation and protective distances form the spill. Those chemicals requiring these special steps and the required responses are captured in Tables 1 & 3 of the Guide. The fourth column of Table 1 indicates those chemicals that meet those criteria.

Finally, the new universally recognized Global Harmonization System (GHS) attempts to quantify the risk of acutely toxic chemicals through a tiering system with 1 as the most toxic and 4 as the least (of the

acutely toxic substances). The fifth column shows that two of our products are Acute 1, the most toxic, and two Acute 4 of lesser toxicity. The remaining products are toxicity only at very close quarters requiring immersion, ingestions, or direct contact.

Table 1: Product Prioritization by Regulatory Categories

	CFATS COI	TSA RSSM	NIOSH IDLH	E Resp Tables	GHS Toxicity
Chlorine (liquid)	Yes	Yes	10 ppm	Yes	Acute 1
Chloropicrin (liquid)	Yes	Yes	2 ppm	Yes	Acute 1
Hydrochloric Acid	No	No	50 ppm	No	Acute 4
Liquid Potassium Hydroxide	No	No	N/A	No	Acute 4
Anhydrous Potassium hydroxide (flake & walnut)	No	No	N/A	No	Oral/contact
Potassium Hydroxide/ Carbonate blends	No	No	N/A	No	Oral/contact
Liquid Potassium Carbonate	No	No	N/A	No	Oral/contact
Anhydrous potassium carbonate	No	No	N/A	No	Oral/contact

Additional review was conducted from a qualified worker perspective with regard to allowed work place exposure and transportation hazards. This review was conducted to ensure that even though the impact on the public and environment were paramount, that there was not a hidden occupational hazard for plant workers, supply chain personnel, or transportation operators that should cause a further review.

Table 2 summarizes those additional findings using RAGAGEP health classifications. OSHA PELs refer to the permissible exposure limits as defined by the U. S. Occupational Health Administration. NIOSH PELs refer to the same limits as defined by the National Institute for Occupational Safety and Health. The third column has the health ratings as defined by the National Fire protection Association pamphlet NFPA 704: Standard System for the Identification of the Hazards of Materials for Emergency Response. The fourth column is the toxic hazard rating as proscribed in the Hazardous Materials Identification System (HMIS). This system originally developed by the American Coatings Association (ACA) is also recognized nationally as RAGAGEP. The final column of Table 2 reflects the U. S. Department of Transportation (DOT) Hazard Classification.

Table 2: Product Prioritization by Health Classifications

	OSHA PELs	NIOSH PEL	NFPA health rating	HMIS Health rating	US DOT Hazard class
Chlorine (liquid)	1 ppm	0.5 ppm	3	3	2.3
Chloropicrin (liquid)	0.1 ppm	0.1 ppm	4	4*	6.1
Hydrochloric Acid	5 ppm	5 ppm	3	3	8
Liquid Potassium Hydroxide	none listed	2mg/m3	3	3	8
Anhydrous Potassium hydroxide (flake & walnut)	vacated	2mg/m3	3	3	8
Potassium Hydroxide/ Carbonate blends	none listed	none listed	4	4	8
Liquid Potassium Carbonate	none listed	none listed	2	3	8
Anhydrous potassium carbonate	None listed	None listed	2	3	8

* indicates chronic health hazard

In summary, the three vaporizing liquids, Chlorine, Chloropicrin and Hydrochloric Acid have approximately the same impact in the workforce as shown in Table 2. However as Table 1 shows the potential impact on the public of misuse or accidental release are vastly greater for Chlorine and Chloropicrin. Therefore at this time in 2014, ASHTA has determined through this risk based approach that Chlorine and Chloropicrin are the higher priority and higher risk products deserving of more detailed evaluation, assessment, and risk management controls.

The company's criteria will continue to be applied uniformly to all products currently screened and new products or methods proposed through the existing Management of Change process. An annual review will be conducted concurrent with the existing scheduled Process Product Control Plan (PPCP) reviews to provide a structured opportunity to review and assess any new industry information. In order to support the ongoing incorporation of relevant, credible scientific advances and have access to significant new information to support prioritization decisions remaining current, ASHTA will continue to support and interact with critical Industry groups and organizations. At this time those organizations include:

The Chlorine Institute including support of the "Jack Rabbit" series of peer reviewed chlorine release testing, participation on relevant issue teams, and assessing the ongoing upgrade of pamphlets in support of mission chemicals.

The American Chemistry Council with participation in its workshops, industry information notifications, and its peer to peer information exchanges.

The Chloropicrin Manufacturer's Task Force (CMTF) and its support of testing and studies and the gathering and analysis of relevant information on the affects, uses, applications, and potential issues of the chemical.

Attachment 2: Risk Tiering and Resulting Actions

Product Risk Based Tiering:

Higher risk: Chlorine
Chloropicrin (Raw Material of Risk: Nitromethane)

Remaining tiered products: Hydrochloric Acid
Potassium Hydroxide (Caustic Potash) Liquid
Potassium Hydroxide (Caustic Potash) Dry/ Anhydrous
Potassium Carbonate) Liquid
Potassium Carbonate) Liquid
Potassium Hydroxide / Potassium Carbonate Blends

Notes:

For the higher risk products the characterization is based significantly on public impact from transportation issues, theft, or diversion. For that reason critical actions requiring implementation include additional review and evaluation of those distributors who will handle higher risk products and the establishment of a process for the approval and review of customers of high risk product. SOP MSD-D06 establishes that process and criteria.

Ongoing Required Actions:

- BDSC review of Product Quality AND SAFETY at least annually.
- Manager EH&S will report to the management team through the periodic Operations Review Meeting any events occurring industry wide that reflect on the safety or stewardship of ASHTA's products or similar products.
- ASHTA will remain a member of the Chlorine Institute, American Chemistry Council, Chloropicrin Manufacturers' Task Force and Ohio Chemistry Council to stay barest of industry issues that could affect Product safety and stewardship.
- Amend the PM for periodic PPCP review to include a simultaneous safety review of the products in question.