

Utilization of the USEPA High Production Volume Information System (HPVIS) to Prioritize Chemicals for Additional Public Health Follow-up

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Background

- NJDHSS Occupational Health Unit
 - Responds to inquiries from employers and workers
 - Responds to inquiries from the public
 - Conducts surveillance of specific hazards encountered at work
 - Conducts surveillance for occupationally related diseases in human populations
- Questions typically focus on human health impacts from:
 - chemicals
 - infectious disease
 - Injuries

Methods

- Reviewed phone log and professional records for last two years
- Summarized specific High Production Volume (HPV) chemicals that were the subject of inquiry
- Linked HPVIS, Section 313, Community Right-to-Know (CRTK), and AOEC Asthma Registry database chemical lists
- Selected chemicals that were in HPVIS and at least one other database list

Methods

- Summarized acute mammalian toxicity and reproductive toxicity data endpoints from HPVIS for the selected chemicals
 - determined high, medium, and low priority for follow-up
- Utilized Section 313, CRTK, and AOEC/asthma registry to identify NJ companies using the selected chemical
- Mailed Chemical use survey to companies

Results

- Total 16 HPV chemicals in phone log/professional records
- Nine of these had data submitted to HPVIS
- Six chemicals were of high or medium priority
- Four of these high or medium priority chemicals have industrial users in New Jersey
 - Phosgene, acrylamide, phthalic anhydride, and hydrogen sulfide

Results – Chemical Selection

Chemical name and CAS #	Mammalian acute toxicity	Reproductive effects noted	Priority	notes
phosgene (75-44-5)	LC50 = 0.049 mg/L	No	high	
acrylamide (79-06-1)	LD50 = 203 mg/kg	No	high	
acetic acid (64-19-7)	LD50 = 4960 mg/kg	No	low	
phthalic anhydride (85-44-9)	LOEL = 25, 000 ppm	Yes	Moderate	0.001 mg/L subtle repro effects noted (sperm motility decrease)
tetrachlorophthalic anhydride (117-08-8)	LDzero = 15, 800 mg/kg	Yes	Moderate	1500 mg/kg subtle repro noted (sperm motility)
triethanolamine (102-71-6)	LD50 = 7390	No	Low	
MMT (12108-13-3)	LC50 = 0.247 mg/L LD50 = 58 mg/kg	No	high	
Hydrogen Sulfide (7783-06-4)	LC50 = 370 mg/L	No	Moderate	

Results

- Chemical handling and use survey mailed to a total of 46 New Jersey Companies
 - nine for acrylamide
 - 10 for hydrogen sulfide
 - three for phosgene
 - 23 for phthalic anhydride
 - one for phosgene and phthalic anhydride

Results

- 28 HPV Chemical Handling Surveys returned
 - 61% response rate
 - Phthalic anhydride 16 surveys (1 lab, 3 storage/transfer, 2 no longer use, 8 reactant, 1 impurity, 1 mix/blending)
 - Acrylamide 7 surveys (3 impurity, 3 reactant, 1 storage)
 - Hydrogen sulfide 4 surveys (2 reactant, 1 byproduct, 1 lab)
 - Phosgene 1 survey (reactant)
- Some releases reported; workers often used protective equipment
- Variable interpretation of what it means to “use” a chemical was noted

Results

- Report findings to stakeholders maintaining company confidentiality
- Follow-up on phthalic anhydride use, an occupational asthmagen
 - Provide free industrial hygiene consultation services and evaluation
- Follow-up with all companies regarding controlling and reducing exposures to workers
 - send education and outreach materials

Conclusions

- HPVIS data is useful for public health
- Data within HPVIS requires background in toxicology and animal testing protocols to interpret
 - Toxicology summaries for the “non-toxicologist” would be useful
- Various animal test protocols and studies utilized within HPVIS make professional judgment a necessary component of chemical comparisons for priority ranking
 - Toxicology contacts at USEPA should be available to provide technical assistance for making these judgments