

Understanding chemical compatibility

July 2016

Mixture Manager		Mixture Report		Compatibility Chart	
Print Chart					
Export Chart Data					
NFPA		Chemical Pairs			
Health	Flammability	Instability	Special	Household Chemical Compatibility Chart	
3	1	0		AMMONIA, SOLUTION, WITH MORE THAN 10% BUT NOT MORE THAN 10%	
3	0	1	Oxidize	HYDROGEN PEROXIDE, AQUEOUS SOLUTION, WITH NOT LESS THAN	N
3	0	1		SODIUM HYDROXIDE SOLUTION	C
				SODIUM HYPOCHLORITE	N

Last month's *Beacon* was about the danger of mixing two common household cleaning products – solutions containing ammonia and household bleach (sodium hypochlorite). The reaction produces dangerous toxic gases.

Have you ever seen a compatibility chart like the one at the left? This one describes potential hazards from mixing some household chemicals – ammonia solution (cleaning products), hydrogen peroxide (cleaning products), sodium hydroxide (drain cleaner), and sodium hypochlorite (bleach). This chart was generated using a computer program called the Chemical Reactivity Worksheet (CRW), available free from CCPS. It shows potential hazardous interactions between combinations of chemicals on the chart. The **red** boxes containing the letter “N” indicate potential hazardous interactions, and the **yellow** box containing the letter “C” indicates a less hazardous potential interaction requiring caution. The complete output of the CRW provides additional information about the potential hazardous interaction. The red arrows highlight the bleach-ammonia interaction.

You may have similar chemical compatibility charts for the materials used in your plant. This is important information to understand so you can take proper precautions to make sure that incompatible materials are not inadvertently mixed. That can happen when making material transfers such as unloading shipments into storage tanks or other containers, when containers are stored adjacent to each other in warehouses or production areas, and when products are transferred to tank farms for storage before being shipped.

You can download the CRW from: <http://www.aiche.org/ccps/resources/chemical-reactivity-worksheet-40>

What can you do?

- Understand chemical reactivity hazards from mixing incompatible materials in your plant, and what safeguards are in place to prevent hazardous mixing of incompatible materials.
- Always follow your plant procedures to prevent hazardous interactions among chemicals.
- Does your plant use a compatibility chart like the one shown above? If so, ask chemists or engineers to explain the chart to you, and to describe any hazardous chemical interactions.
- Verify the intended destination when hazardous materials are transferred. Many mixing incidents could have been prevented by proper labeling and verification of correct transfer.
- Read other *Beacons* describing incidents caused by mixing incompatible chemicals: August 2003, August 2005, July 2006, March 2009, March 2011, April 2012, December 2013, and June 2016 (read-only copies available at www.sache.org).

Know what happens when you mix chemicals!