Advice & Counsel

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Making a Company Resistant to Terrorism

Dear Advice & Counsel,
Following the tragedy of September 11, my company has put me in charge of reviewing our operations, with the goal of making this company as resistant to terrorism as possible. I know we handle numerous chemicals and chemical products in our plating department, but I'm not sure which ones would be possible terrorist tools. Also, aside from chemical dangers, what other avenues should I be concerned about? Can you provide me with some guidance?

Signed, I. M. Patriotic

Dear Ms. Patriotic,
I congratulate you and your company for having the foresight to identify a potential problem and tackling it before some regulator decides to dictate what must be done. It's not just foreign terrorists we need to concern ourselves about. In Chicago, we recently had an incident where a demented individual was caught with a pound of cyanide in an unsecured storage locker of the subway system. His nickname, "Dr. Chaos," indicates that he probably had no beneficial use in mind. It is not known where this goofball got the cyanide.

Modern surface finishing facilities have controlled access to their chemical products and limit the amount present on site as much as possible. There are some chemicals that you should pay particular attention to.

Some chemicals fall into a broad category called oxidizers. When combined with some members of another chemical category called reducing agents, under the right conditions, the result can be an explosion. An example of such a reaction is diesel fuel (reducing agent) mixed with ammonium nitrate (an oxidizer, and common ingredient in stripping cadmium from steel). This mix is believed to be the explosive used in the Oklahoma City bombing a few years ago.

Typical oxidizers used in metal finishing include chromic acid, nitric acid, peroxide, sodium hypochlorite, calcium hypochlorite, potassium permanganate, ammonium nitrate, sulfuric acid, phosphoric acid.

Control Access to Oxidizers

I would recommend controlling all access to oxidizers by storing these chemical products in a secure storage area, with limited access by only trusted individuals who must get a key and log in/out of the storage area. Be sure the storage area is locked at all times. Conduct a surprise inspection at least once a week, and severely punish anyone responsible for an infraction. Installation of a video surveillance system is a good idea if it is too difficult to conduct such inspections.

Secure Poisonous Chemicals

Your facility may utilize cyanide or other potent poisonous chemicals such as sulfides, arsenic, fluorides, mercury and mercury compounds. Cyanides, sulfides, and other poisons, depending on composition, must be stored separately from all other chemicals, and I would suggest that only one or two persons on each shift have access to the locked storage area for poisons. Each drum of cyanide (or similarly dangerous poisons) should have its own locking system to reduce the chance of foul play. Again, log-in/out of all people entering the cyanide storage area should be strictly followed. Inventory the cyanide regularly and report any missing amounts to the authorities. Keep only as much cyanide on hand as you can comfortably operate with. Require two people to make any transfers of cyanides from the storage area to the process, even if one just watches.

Limit Access to Gases

Metal finishing facilities may use compressed gases, such as ammonia, acetylene, chlorine, sulfur dioxide, oxygen and hydrogen. All of these gases can be used to cause widespread injury to your neighbors, simply by their release from their containers. Controlled access and surveillance of storage areas must be practiced.

Monitor Acids & Solvents

Acids can be used to produce explosions as well. Acetic acid is particularly hazardous, in that it can explode when mixed with a number of other materials, including other acids. For example, combinations of acetic and any of the following are potential explosive mixtures: chromic acid, nitric acid, phosphoric aid, ammonium nitrate, peroxide, and solvents.

Flammable solvents require careful attention because they are both fire and explosion hazards. Find suitable non flammable alternatives, if possible, and practice the controlled storage recommendation.

If you provide electroless nickel plating, you are probably storing some very powerful reducing agents, which can produce powerful explosions when mixed with oxidizers. Examples are sodium borohydride, sodium hypophosphate, and hydrazine. Other powerful reducing agents include sodium hydrosulfite sodium metabisulfite and sodium bisulfite, which are commonly used in wastewater treatment.

I have not provided a complete list of all chemicals and chemical products that a terrorist can use to cause trouble. Your guide can be the MSDS on each product. Look for information on the reactivity, incompatibility, and flammability of each product you use. Contact the manufacturer of particularly hazardous materials to see if a less hazardous substitute is available.

Control Access to the Building

Review the access to your facility. If it is easy for a "visitor" to enter your building undetected, you'll need to make some changes. Plating rooms can get hot and

humid, so it is not unusual for a plating department to have the back door open to let in some fresh air. You might need to install a window they can open instead, so that the back door remains shut to keep undesirables out. Keep in mind that emergency exits must remain operable and viable.

Require ID tags and written log-in of all visitors to the plating shop. Change the tags periodically to avoid having someone counterfeit the tag or walk out with a batch to be misused later.

Train all your plating shop workers to recognize the danger of strangers entering the plating facility. All unknown personnel should be challenged to identify themselves and their business if they are not wearing appropriate identification tags.

A thorough background check of all new/recent hires is extremely desirable. Consult with your company attorney to make sure you don't over-step your legal ground, but you should do all you can (legally) to make certain your workers are not members of extremist groups or have a history of mental instability.

Don't allow any visitor to go into your plating shop unless they have a specific purpose that you are aware of. Keep in mind that it may be relatively easy to safely store dangerous chemicals, but it is difficult to prevent unauthorized individuals from removing small portions of your processing solutions (especially cyanides), once they are in your shop.

Contact your chemical suppliers and discuss security issues relating to the delivery of chemical products to your door. Delivery trucks should be adequately secured (locked), and drivers should be made aware of the possibility of hijacking and/or robbery attempts.

This may be a good time to get very familiar with your local emergency planning committee and to discuss with them measures that can be taken in your community to reduce the possibility of a terrorist event.

Our readers probably have additional ideas on how to make a metal finishing facility more terrorist-proof. I hope they send their ideas to me for publication in this column.

More on TRI Reporting

Dear Advice & Counsel,
I appreciate the recent articles on TRI reporting requirements for lead compounds. I have heard that leaded stainless steel, leaded brass and leaded bronze are exempt from the reporting requirements. Is this true? What about leaded steel?
Signed, T. R. Overload

Dear Mr. Overload,
I'm sorry to report that EPA has strayed from their goal of communicating clearly with industry. The body of the regulation clearly states that leaded stainless steel, brass, and bronze are exempt from the regulation. In the appendix, however, they state that IF the alloy is processed in such a manner that lead is removed or released, then the exemption does not apply. Until informed otherwise, because cleaning and acid pickling of these alloys would produce lead compounds, the exemption does not apply. Similarly, If you polish leaded brass, you are removing lead from the brass (and producing polishing dust emissions), so you would need to include that operation in your inventory. ***P&SF***