

US Chemical Warehousing Whitepaper

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This whitepaper is not meant to be a prescriptive document for setting up a chemical warehouse, but more some observations from my past two decades of operating as a third party provider primarily serving the chemical industry. Chemical storage enhances the level of risk due to the nature of the product(s) that you warehouse, and if you plan to store chemicals you should go into the venture carefully, methodically and well-informed. Some key elements to consider:

Safety – You have a responsibility to protect your employees, the surrounding community, your customers' products

Building Construction & Design – are you properly set up to handle the chemicals you store/are considering storing?

Training – do you have a program in place to equip your employees with the information necessary to protect themselves and perform consistently at a very high level

Processes – do you have defined processes in place to handle the responsible storage and distribution of chemicals

Regulatory – are you aware of all regulatory requirements and prepared to ensure compliance

Insurance – are you properly ensured in the event you have a chemical release incident and must engage in pollution remediation/clean up

Approved Chemical Storage Facility

At the start you must have a storage facility appropriately designed and outfitted for the type of chemicals that you are looking to store & distribute. Local municipalities adopt a Fire Code that very specifically defines what must be done to enable a facility to store various Classes of product. Some of these considerations include: fire sprinkler design, facility construction type, air exchanges within the facility (to avoid the build-up of dangerous fumes), roof venting (in the event of a fire), fire water containment (so chemically contaminated fire water or spilled chemicals do not get into ground water), facility fire proofing (for flammables), maximum allowable quantities (there are hard limits to how much material you can store in certain product classes) etc. In most cases, the local municipalities have adopted the International Fire Code, but you should verify this with your local Fire Marshall. To prepare a building you will need to do a technical assessment of exactly what you are looking to store. This is often done by a certified Fire Protection Engineer. With the technical assessment, an architect can draw plans for the facility. Plans are approved by the local permitting entities and inspections are done at conclusion by inspectors (mechanical, electrical, fire marshal). Once approved by all departments, you will be granted a certificate of occupancy for the appropriate class of storage. The Fire Marshall will send inspectors periodically to verify that you are operating in compliance to Fire Codes and under the proper occupancy. When considering your site it is important to consider the surrounding community (are you too close to neighborhoods, schools, churches) as well as the proximity to emergency responders (are you close enough to fire stations, hospitals, police)

Procedural Excellence

Before you begin receiving product you will want to establish procedures that allow you to receive, store, and ship product safely and in compliance. Chemicals are shipped with Safety Data Sheets (SDS) that detail the product and required safety protocols, proper storage conditions, etc. It is extremely important that all product SDS are reviewed, and approved by a competent authority at your company, well before the material is received. Product compatibility with other products within your warehouse is a frequently overlooked area. It is important to ensure that you are not setting yourself up for a disaster by co-locating non-compatible materials in close proximity in your warehouse. Batch management is also extremely important as in most cases you need to send a "Certificate of Analysis" (COA) along with your shipment. This is a chemical quality report that must be reviewed by the end customer before they use the batch in manufacturing. If you ship the wrong batch, your COA will not match, and the customer will not be able to use the material. Much production in the chemical industry is Just-In-Time (JIT) and if they have the wrong batch and it cannot be used you may be responsible for a plant shutdown, and the corresponding financial penalties caused by your error. Part of your procedures should include emergency response planning along with physical security of your customers' products (certain chemicals may be targeted by terrorists). Product labeling also takes on a much higher potential for risk as mislabeling chemicals can result in the wrong material being put into process potentially resulting in explosion and death.

Safety

Through every element, safety is the overarching element. It is critical that you instill a culture of safety in all that you do with respect to chemical warehousing. Responsibility starts with each employee and you need to make sure that they understand the prevailing goal of the day is to ensure each person goes home to their loved ones safely at the end of the day. Shortcuts will eventually lead to errors, injury, and the risk of death. The importance of this cannot be underestimated. You will need to do a very thorough risk assessment of the entire operation. You will need to prepare extensive plans to respond to various type of emergencies (fire, spill, spontaneous reaction, terrorist attack, etc.) to protect not only your employees, but the surrounding community. The facility will need to be equipped with proper safety equipment (eye wash stations, emergency showers, over packs and spill trays for leaking product, respirators and other personal protective equipment (PPE), etc). An auditing program will need to be established as "you get what you *inspect*, not what you *expect*".

Training

You will need a thorough and effective training program to ensure that your employees are prepared to execute the procedures and programs that you have put in place. In addition to you own company training you have the responsibility to train your employees as required by the US Department of Transportation in the Code of Federal Regulations Part 49 (CFR 49). If you ship via air, you will need to train employees on the International Air Transport Association (IATA) requirements for shipping chemicals. In addition to lift truck training as required by the Occupational Safety & Health Administration (OSHA), you will need to train your employees in Hazard Communication Planning and the Globally Harmonized System for Hazard Communication (GHS). It is important to note that

hazardous products are defined differently by DOT and OSHA (eg a product can be OSHA hazardous but not necessarily a DOT hazard). Crisis Communication Planning is also very important to prepare for a potential crisis. Because of the value of trained & experienced employees, retention becomes that much more important. You cannot have inexperienced, temporary employees handling hazardous chemicals. You need full vetted and trained employees who know what to do in both normal, and emergency, situations.

Compliance

It is important to note that the regulators are there to protect US citizens, including you and your employees. The best approach is to work with inspectors & officials to help them better understand your business as opposed to fearing them or trying to avoid the requirements. Some entities you will work with:

Local Zoning Department – Facility to local code

Local Fire Marshall – Proper facility storage

Local Emergency Planning Committee – disaster planning & preparedness

OSHA – workplace safety for your employees; proper training, PPE, product labeling

US DOT – transportation of chemicals; training, proper securement, adherence to the law

DHS – In the event you handle chemicals of interest to terrorists, requirement to register under Chemical Facility Anti-Terrorism (CFATs) program

EPA (State & Federal) - Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA) also known as SARA Title III; annual report of chemicals stored

You will need to consider how you will stay on top of requirements in a dynamic regulatory environment where new law and interpretation emerges constantly. A good pipeline of information is absolutely a must to ensure compliance at all times.

Insurance

Keep in mind that you are handling much more sensitive materials that require a higher degree of care based on the risks involved. Shipping and/or labeling errors can result in the wrong chemicals being used in process and significant financial loss, explosion, death, etc. Released materials (from fire, damage, etc.) can cause harm to your employees, damage to the environment, and result in *significant* costs to remediate. You must ensure that your insurer has you adequately covered for the risks that you undertake, to include Pollution Remediation coverage.

Conclusion & Other Considerations

Chemical warehousing, especially of hazardous materials, is not a hastily considered proposition. It is a deliberate and strategic decision that requires significant investment, planning, and flawless execution. There are special insurance (Pollution Remediation) coverages that should be considered, and likely obtained. It may be wise to deploy a quality management system (like ISO 9001) to document processes for training and consistent execution. There are programs in place from the American Chemistry Council

(ACC - tend to be manufacturers primarily): Responsible Care and the National Association of Chemical Distributors (NACD – distributors and affiliated): Responsible Distribution that verify a well-balanced program to safely and effectively store and distribute chemicals.