Vang, Mai (CI-StPaul)

From: Kevin Roepe <Kevin.Roepe@harcros.com>
Sent: Monday, December 16, 2019 6:28 PM
To: *CI-StPaul_LegislativeHearings
Cc: Wiese, Angie (CI-StPaul); Chris Leaver [STP]; Craig Mader; Eric Patton; Imbertson, Mitchell (CI-StPaul); Jack Cleary
Subject: Harcros Chemicals
Attachments: SFNC_Harcros HazMat - Alternative Design_2019-12-16.pdf

Good evening,

The attached proposal for an alternate means of fire protection for our facility at 584 N Fairview Ave, St. Paul is being submitted for your review and consideration. This is in response to the original fire correction notice dated Nov 12, reference #15408.
(See attached file: SFNC_Harcros HazMat - Alternative Design_2019-12-16.pdf)
Regards,
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December 16, 2019

RE: REQUEST FOR APPROVAL OF ALTERNATIVE DESIGN

Harcros Chemicals
584 North Fairview Avenue
Saint Paul, Minnesota

This document is intended to summarize Harcros' plan for their facility located at 584 North Fairview Avenue in Saint Paul. Given the available water supply for fire protection purposes and as an existing facility, Harcros is requesting approval of a protection plan that does meet the prescriptive requirements of the 2015 Minnesota State Building Code (MSBC) and 2015 Minnesota State Fire Code (MSFC). Based on existing conditions/constraints and the specific hazards present, a plan has been developed to ensure Harcros is managing the hazards of their business and operations in a reasonable and prudent manner and provide protection features where practicable to meet the intent of the code.

BRIEF HISTORY

The company has been operating out of this facility as a chemical distribution warehouse since the early 1970's. In the 1980s and then again in 2001, the company changed ownership through a couple acquisitions with Harcos taking ownership in 2001. Since the site has been occupied back to the 70's the chemical storage and inventories of chemicals in totes and drums has not changed very much. The overall site inventories have changed and have significantly been reduced over the years. Until the late 1990s or early 2000s there used to be an outdoor storage building that held additional corrosives and up until about 2 years ago they used to bring in railcars of caustic soda and had (9) 12,000 gallon storage tanks of caustic soda that Harcros would dispense off these to repackage and transfer liquids between tanker truck loads. However, none of these activities exist today and Harcros is strictly a storage location for sealed totes and drums.

Last year, Harcros had a 3rd party audit as part of a company-wide Risk Management Program audit. As part of that audit, they were required to conduct a fire protection evaluation. Summit was contracted to conduct the evaluation and resulted in the report provided to Harcros on September 5th. On October 8th, Harcros initiated contacted with Angie Weise (City of St. Paul-Department of Safety & Inspections) regarding the findings of the report and discussed how we should proceed to correct the findings in Summit's report. Angie Weise recommended that since Harcros was due for an annual Occupancy Certification Inspection, that the issues be handled and resolved through the inspection process.

During the recent inspection on November 12, 2019, the fire protection evaluation report and facility conditions were discussed. The fire inspectors issued a notice of deficiency and recommended that Harcros work through the appeal process to resolve the findings.

Summary of Existing Conditions

As noted above, Summit reviewed the existing facility and identified areas that were not in compliance at the time of our review. These findings can be found in our report dated September 5, 2019. In short it was found that the facility stored physical hazards (flammable/combustible liquids and oxidizers) and health hazards (corrosives) in quantities that would warrant classification as a Group H occupancy. Based on records, the facility did have a permit on file with the City of St. Paul as a mixed occupancy including Warehouse High Hazard (H-3 Occupancy), Warehouse Ordinary Hazard (S-1 Occupancy), and Office (B Occupancy).

This information makes it clear that the presence of hazardous materials was known, but due to a lack of additional detail it was assumed that the small room in the back corner of the facility used for the storage of flammable/combustible liquids was the area permitted as a Group H occupancy and the remainder of the facility was not. Given that the building's use has not changed, at least regarding the presence and general quantity of products classified as Corrosive by the MSFC, it is unknown why the site was also not already permitted for this existing hazard.

Based on the assumption that the H-3 (flammable/combustible storage) was the only previously approved condition, the building was found deficient based on the quantity of hazardous materials being stored in areas outside this room. Among the deficiencies noted in Summit's review was the requirement to have protection by an automatic sprinkler system. The building has partial protection, specifically within the flammable room (H-3), the remainder of the facility does not have sprinkler protection.

Upon further review, it was noted that the water supply to the facility was significantly low and would not support a sprinkler system and the protection required. To provide a sprinkler system using the existing connection would require the installation of a water storage tank and fire pump. Through additional investigation it was found that the available water supply from the main located in Fairview Ave. is slightly better than where the existing water supply is connected. However, it is clear that this water supply would still require a fire pump to provide the required protection and also additional cost for having to run a new underground service in to the building and connect to the city supply located in Fairview Ave.

Rough order of magnitude costs to install the required sprinkler protection for this facility assuming use of the better water supply are approximately $300,000 with a significant portion of the cost attributed to the equipment required to provide sufficient water supply. This estimate does not include construction of a fire pump room nor HVAC, electrical and similar miscellaneous requirements for the fire pump room. The estimate also does not include providing the necessary electrical power to supply the fire pump. Note that the cost noted does not include the cost to make any other required/recommended upgrades needed beyond sprinkler protection for the facility. When all of these additional requirements are considered, the cost could exceed $500,000.

Based on all the factors and information above a mitigation plan has been developed without the installation of automatic sprinklers.

Mitigation Plan

The proposed protection plan for the existing facility is summarized below, and includes a number of strategies to mitigate risk without the installation of fire sprinklers. These include compartmentalization (dividing the building into smaller areas by fire rated construction), active fire protection systems, segregation of products to reduce risk, providing protection features to protect people and property from the consequences of unauthorized discharge involving hazardous materials, and robust operational, emergency and safety planning by Harcros.

The general plan is to meet the majority of requirements applicable to the Group H occupancies, with the main exception being not adding additional sprinkler protection, and exceed minimum requirements or provide additional protection feature where it makes sense for the hazard.

The specific protection features proposed are listed below, and it is noted specifically which ones will require upgrades versus an existing feature.

1. Protect the building throughout with a fire alarm system, including early warning detection (smoke and heat detection) throughout the building, manual pull stations, and a shall activate full occupant notification throughout all spaces within the building in accordance with MSBC 907.5. ***There is a partial fire alarm system in the building without automatic detection. This system will be replaced and represents a significant upgraded to the existing protection, also would be considered above minimum requirements.***

2. Construct and upgrade fire rated construction to provide the ability to segregate hazards (i.e. isolate and separate flammable hazards) and subdivide the building into smaller areas to reduce the exposure of a potential incident. See the plan shown in Figure 1 for a conceptual plan. MSBC Table 508.4 requires H-3 and H-4 occupancies to be separated from each other by 1 hour construction (assumes sprinkler protection) and from B occupancies by 2 hour fire rated construction. The design is proposing 3-hour separation for both occupancy separations. ***This involves both extra protection beyond minimum prescriptive code requirements and many of the walls and separations noted will require new construction, and work to upgrade existing walls to the ratings noted will be required. This represent a significant upgrade to the code prescribed features.***

3. Segregate and adjust storage within the building and new areas to minimize risk especially related to flammable hazards and oxidizers. See Figure 1 for specific requirements. Class IIIB liquids will be maintained below MAQ per control area; all Class I, II, and IIIA liquids will be stored within the flammable room only; oxidizers will only be stored in the oxidizer room and absolutely no combustibles will be allowed within this room. ***This is not construction related but will involve effort to adjust current processes and storage strategies/amounts.***

4. Improve the means of egress for the building to be compliant with minimum code requirements and specifically provide reduced travel distances for areas storing hazards materials. MSBC would normally require a maximum travel distance of 175 ft. to reach an exit for Group H-4 occupancies. It is proposed that the travel distance to reach an exit will not exceed 150 ft. and the distance to either reach and exit or leave any single area (i.e. pass through one of the

specified fire rated walls will not exceed 100 ft. ***This will require work to the facility and is intended to exceed minimum requirements.***

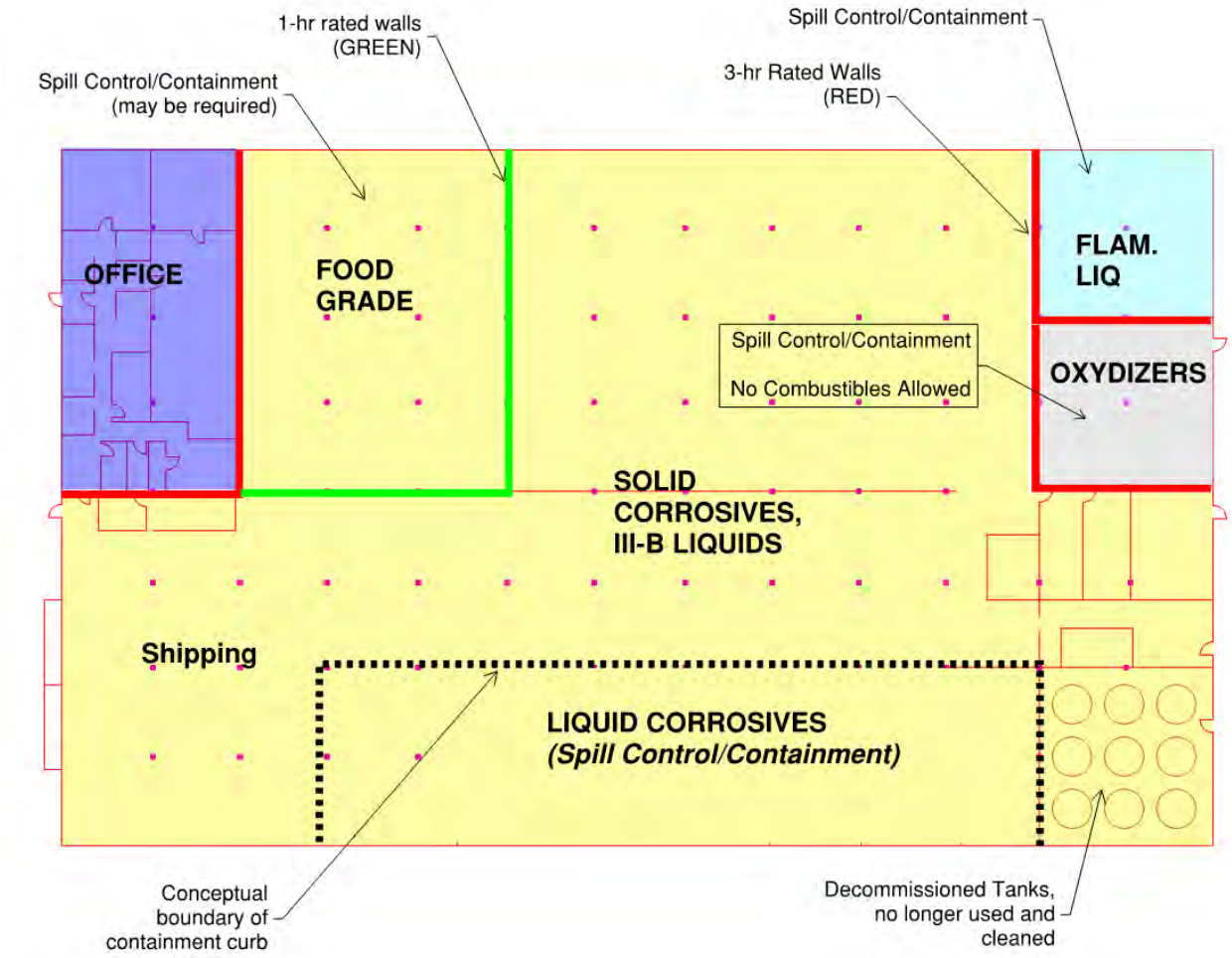

Figure 1: Proposed Facility Layout

5. Provide spill control and secondary containment for all areas that exceed the MAQ for the hazard classes present within the control area and contain products that MSBC/MSFC requires this protection. Spill containment will be sized as required by the MSFC where provided. ***The facility has some areas of spill control/containment but it will need to be modified and added based on the proposed plan and to ensure proper compliance.***

6. Provide an emergency alarm as required by MSBC/MSFC for storage of hazardous materials. The emergency alarm is distinct from the fire alarm as it is intended to alert occupants to an emergency condition involving hazards materials. ***This will be a new installation.***

7. Provide code required emergency or standby power for all required protection features involving hazardous materials. ***This will be a new installation.***

8. Container types storing flammable and combustible liquids will meet MSFC and NFPA 30 requirements. Specifically, storage for Class I, II, and III-A liquids will not be allowed within non-metallic totes. ***This requires changes to current operations.***

9. Provide for review and comment all existing and updated HMIS, HMMP, Operating and emergency procedures, emergency plan, spill mitigation, accident procedures, and similar. Harcros will also provide written plan for management of change of these documents.

10. Harcros will implement and follow stringent safety audit procedures. This will include audits completed on a monthly basis with all findings recorded. Documentation and recommendations for change based on findings are recorded and available for review by fire inspector. In addition to the internal audits, and outside 3rd part auditor will be brought in to review the facility on an annual basis to ensure the plan developed in this document is being followed and identify any new hazards. The 3rd party audit will be documented and submitted to the City of St Paul. ***This represents an item that exceeds any code requirements and helps ensure a customized plan such as being proposed here is followed after implementation.***

Proposed Schedule

As part of the proposed plan, Harcros has proposed the following proposed schedule to complete item outlined in this plan.

1. Remove all flammables from warehouse and place within flammable room – 15 days

2. Reduce Class IIIB liquids to below MAQ in warehouse area – 30 days

3. Isolate all Oxidizers into Oxidizer room and remove all combustible material from oxidizer room – 15 days

4. Fire Alarm System – Submit for permit within 30 days, complete initial upgrade within 60 days (include at a minimum detection throughout and approved occupant notification)

5. Submit for permits and final design for all other requirements – 60 days and complete construction of all items within 9 months

Summary

The proposed plan offers significant improvements and investment in life safety over the current conditions. The proposed plan specifically isolates the flammable hazards into a cut off room that has existing sprinkler protection. Oxidizers are isolated and kept in an area that will not have any combustibles, oxidizers are not themselves a fire hazard but rather act more as an accelerant. So keeping them away from any from anything that may be the start of a fire is prudent protection.

This strategy essentially leaves Class IIIB liquids below the MAQ (without sprinklers) and Corrosives in the remainder of the facility. Corrosives are relatively low fire hazard compared and are not considered any different than ordinary commodity storage in this respect.

So by segregating the hazards and upgrading to add the required and additional protection features specified in this letter, the hazard will be mitigated in a manner that can be considered appropriate without sprinkler protection. Sprinklers are not intended to extinguish a fire, rather their intent is to control and contain the fire and limit the potential of fire spread prior to arrival of the fire department. Fire sprinklers also serve as an early warning device for the presence of fire. The proposed design has added early warning detection since sprinkler will not be present and the design has added significant compartmentalization to limit the spread and potential area involved.

We feel that by utilizing methods of passive fire protection such as fire-resistance rated construction, and by installing early warning detection throughout the facility, spill control, and the policies and procedures outlined within this report, that the Harcros facility meets the intent of the Code requirements and objectives for a performance-based design alternative in lieu of protection via fire sprinklers within this facility.

If you have any question or need additional information please feel free to reach out to me directly at 612-651-1872 or via email at Cleaver@SummitCoUS.com.

Prepared by,

Christopher Leaver, PE
Senior Fire Protection Engineer
Consulting Manger