Chemical Decomposition, Fire, and Toxic Gas Release at Bio-Lab, Inc.

Conyers, Georgia | Incident Date: September 29, 2024 | No. 2024-04-I-GA

Investigation Update

May 2025

This document provides a second update[a] on the CSB's investigation of the September 29, 2024, incident at Bio-Lab, Inc. in Conyers, Georgia.

Incident Summary

- On September 29, 2024, the Bio-Lab, Inc. facility located in Conyers, Georgia, experienced a chemical reaction involving reactive material stored in a warehouse that came into contact with water, which resulted in extensive off-gassing, multiple fires, and a massive plume of potentially toxic smoke.[b] The chemical reaction generated heat that led to the decomposition of products and subsequently caused the fires within the building. The resulting decomposition and fires produced large plumes of smoke and released toxic vapors, prompting local shelter-in-place orders, evacuations, and road closures. Additionally, Rockdale County Fire Rescue responders reported observing a significant amount of water flowing out of the warehouse before any water was applied to the building. This suggests that the warehouse's sprinkler system was activated on the day of the incident. Ultimately, the warehouse was destroyed. No injuries were reported at the site during the incident or in the subsequent emergency response that followed. As a result of the incident, local officials reported that about 17,000 people were evacuated [1].[c] Local media also reported that approximately 90,000 people in the Atlanta metropolitan area were advised to shelter in place for a period of time due to the toxic smoke from the fires. Nightly shelter-in-place warnings to the surrounding community within a 2-mile radius continued for nearly three weeks after the incident.

Background Information

- The Bio-Lab facility in Conyers opened in 1973 and has changed ownership over the years. In 2013, KIK Consumer Products ("KIK") acquired Bio-Lab, establishing it as a separate corporate entity and making it a subsidiary of KIK. At the time of the incident, Bio-Lab Conyers ("Bio-Lab") was a subsidiary of KIK.

- In November 2024, the CSB published an update regarding its investigation into the incident that occurred at the Bio-Lab Conyers facility on September 29, 2024. The November 2024 update provides additional background information about the Conyers facility and the warehouse involved in the incident. It also includes facts gathered during the CSB's initial deployment to the facility following the incident.[d]

[a] The CSB published a previous investigation update for its Bio-Lab Conyers investigation in November 2024.

[b] "Off-gassing" is defined as the "emanation of volatile matter of any kind from materials into habitable areas [5, p. 282]," with "volatile matter" defined as "[p]roducts given off by a material as gas or vapor [5, p. 428]."

[c] Rockdale County's Update (Facebook video)

[d] The CSB arrived on-site on October 1, 2024.

- At the time of the incident, Bio-Lab was storing more than double the amount of reactive chemicals in the building than the company reported to Rockdale County for permit application purposes. As of June 20, 2019, prior to the construction of the new storage warehouse at the Conyers site,[a] in response to inquiries from Rockdale County about the Company's permit submittal, documentation was prepared stating that Bio-Lab anticipated that an "average inventory" of approximately 6.2 million pounds of raw materials, including oxidizers, would be stored in the storage warehouse.[b] The National Fire Protection Association ("NFPA") defines an oxidizer as any material that readily yields oxygen or other oxidizing gas or that readily reacts to promote or initiate combustion of combustible materials and that can, under some circumstances, undergo a vigorous self-sustained decomposition due to contamination or heat exposure [2, pp. 400-18].[c]

- Hereafter in this Update, the term "TCCA" will refer to Bio-Lab's manufactured 99 percent trichloroisocyanuric acid ("BLC-90")[d] and the various trichloroisocyanuric acid formulations stored in the storage warehouse as of September 29, 2024, based on the inventory provided to the CSB.

- Bio-Lab anticipated that the storage warehouse's inventory would consist of over 6.2 million pounds of "trichlor," TCCA, sodium dichloroisocyanurate ("DCCA") in both anhydrous and dihydrate forms,[e] and bromine or bromochloro-5,5-dimethylimidazolidine-2,4-dione ("BCDMH"). However, by September 2024, the storage warehouse's inventory had grown to approximately 13.9 million pounds of various formulations of TCCA, DCCA, and BCDMH combined, over twice the amount initially indicated by Bio-Lab to local officials.[f]

- According to the storage warehouse inventory information provided to the CSB, Bio-Lab stored four (4) key oxidizers (classified as Class 1 or Class 2 oxidizers) that are relevant to the incident on September 29, 2024: TCCA, DCCA dihydrate, anhydrous DCCA, and BCDMH. The NFPA 400 *Hazardous and Materials Code* (NFPA 400) classifies Class 1 Oxidizers as the lowest level of oxidizers, meaning this material "does not moderately increase the burning rate of combustible materials." Class 2 oxidizers are the second lowest level and "cause[s] a moderate increase in the burning rate of combustible materials" [2, pp. 400-18]. Thus, these materials do not readily react to promote or initiate the combustion of combustible materials.

- Out of the nearly 13.9 million pounds of Category 1 and Category 2 solid oxidizers stored in the storage warehouse, as of September 29, 2024, approximately 2.9 million pounds of these oxidizers were stored outside

[a] The storage warehouse drawings were issued for construction on July 19, 2019.

[b] According to Bio-Lab, the Rockdale County Commercial Permit did not impose a numeric limit on the quantity of raw materials to be stored in the building.

[c] The NFPA 400 groups oxidizers into four classes. Class 4 Oxidizers are the highest level of oxidizers, meaning these materials can undergo an explosive reaction and cause a severe increase in the burning rate of combustible materials [2, pp. 400-18].

[d] Bio-Lab refers to its trichloroisocyanuric acid product, manufactured at Bio-Lab Lake Charles, as BLC-90. The safety data sheet for BLC-90 indicates that it has a composition of 99% by weight trichloroisocyanuric acid and 90% available chlorine. Available chlorine is "the amount of free chlorine that a substance (such as bleaching powder) yields when treated with an acid in the presence of a chloride [15].

[e] Anhydrous denotes "a chemical compound lacking water: applied particularly to salts lacking their water of crystallization" [16, p. 24]. Dihydrate is defined as a "crystalline hydrate containing two moles of water per mole of compound" [16, p. 176]. According to KIK/Bio-Lab's raw material specifications, anhydrous DCCA must have moisture levels below 3 percent, while DCCA dihydrate has moisture levels between 11 and 14 percent. Additionally, anhydrous DCCA and DCCA dihydrate present different thermal hazards. For more information, refer to the CSB's *Optima Belle Explosion and Fire* final report at https://www.csb.gov/optima-belle-explosion-and-fire/.

[f] The storage warehouse inventory included approximately 550,085 pounds of trichloroisocyanuric acid that were shipped from Bio-Lab Lake Charles in preparation for Hurricane Francine.

the firewall (**Table 1**),[a] which divided the warehouse into two storage areas (**Figure 1**) and was intended to prevent the spread of a fire. The area behind the firewall was referred to by Bio-Lab personnel as the "bunker." The oxidizers stored outside the bunker were in multiple piles on racks and were packaged in very large individual flexible bulk bags called "super sacks" (**Figure 2**), each holding approximately 2,750 pounds of material.[b] The oxidizers were also stored alongside other dry chemicals within the rack storage system and were not segregated from the other dry chemicals.

Table 1. Summary of Oxidizers Inventory Stored in the Storage Warehouse

Inventory During Incident (in millions of pounds)			
Oxidizer Class*	**Material Name**	**Inside Bunker**	**Outside Bunker**
Class 1	TCCA DCCA Dihydrate	9.942	2.861
Class 2	Anhydrous DCCA BCDMH	1.110	0.077
	Chemicals Total:	11.052	2.938

*As defined by NFPA 400

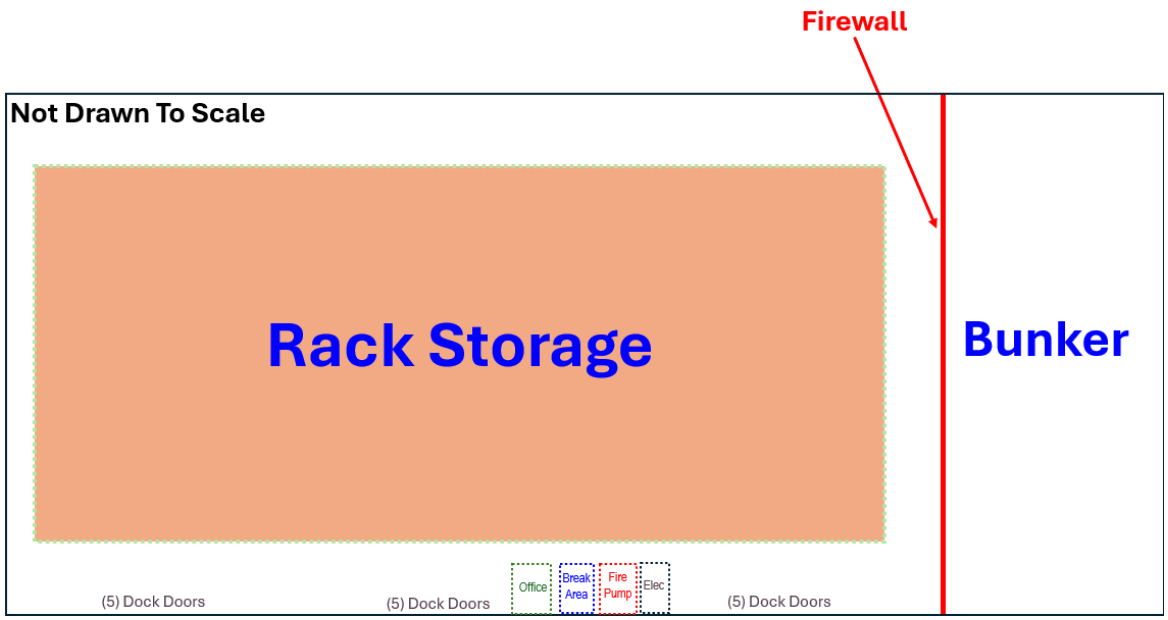

Figure 1: Sketch of the Storage Warehouse floor plan showing the firewall, rack storage, and the bunker area. (Credit: CSB)

[a] The definition of firewall is "[a] wall… subdividing a building to prevent the spread of fire and having a fire resistance rating and structural stability [6, p. 3.3.15.6]."

[b] The bags/super sacks containing TCCA shipped from Bio-Lab Lake Charles are made of woven polypropylene fabric.

Figure 2. Depiction of super sacks stacked two high. (Credit: CSB)

- The NFPA 400 definition of a water-reactive material is "A material that explodes, violently reacts, produces flammable, toxic, or other hazardous gases; or evolves enough heat to cause self-ignition or ignition of nearby combustibles upon exposure to water or moisture" [2, pp. 400-17].

- While TCCA and DCCA are not classified as water reactive per the Safety Data Sheets ("SDSs"), their SDSs indicate that contacting these materials with water or moisture may cause fire or explosion hazards. The SDSs also indicate that it is necessary to flood the area with large amounts of water from a distance to extinguish a fire involving these materials."

- Although TCCA and DCCA are known to have water-reactive properties, according to the NFPA and the International Fire Code definitions of water-reactive materials, the predominant manufacturers of the material do not list their reaction with water in the storage, hazard statements, or precautionary statement sections of the SDS. Among the SDSs provided to the CSB for the material stored in the storage warehouse, one manufacturer of DCCA notes under Physical Hazards: "Do not get water inside container. Wet material may generate nitrogen trichloride, an explosion hazard."

- Before Bio-Lab began storing inventory in the storage warehouse, the design-build contractor for the warehouse engaged a third-party fire and risk consultant to assess whether the automatic Early Suppression Fast Response ("ESFR") sprinkler[a] system was adequate for Bio-Lab's plan to store super sacks stacked two high (**Figure 2**) to an approximate height of 7 feet in the bunker area. The storage warehouse's ESFR sprinkler system uses a fire pump to enhance the pressure of the municipal water supply and ensure sufficient flow for effective fire suppression. The assessment of the ESFR sprinkler system was based on storing nylon super sacks of TCCA in stacks of two in height, with reference to the design criteria outlined in the NFPA 13 *Standard for the Installation of Sprinkler Systems*. In October 2019, the consultant determined that the installed K-16.8 ESFR sprinkler system at a minimum design pressure of 52 pounds per square inch (psi)

[a] ESFR sprinklers are high-volume and "designed to react to a fire by automatically releasing a stream of water and distributing it in a specified pattern and density over a designated area so as to promptly reduce the fire to an acceptable level" [11, p. 128]. They have been "used in warehouses to protect high-piled inventory or palletized inventory" [13].

would provide adequate protection for the intended 7-foot high storage of super sacks containing Class 1 Oxidizers in the bunker.

- Bio-Lab first began storing TCCA within the storage warehouse bunker on November 5, 2019. Although final construction activities inside the warehouse and on the building exterior continued through late December.

- In March or April 2021, Bio-Lab submitted drawings to Rockdale County to expand the scope of the storage warehouse by adding a new 49,000 square foot rack storage area outside the bunker. This area would be protected by an ESFR fire protection system designed to store various commodities, including pails, cardboard, and bottles, up to a height of 25 feet.[a, b] They also applied for the necessary permit for the rack storage, which the Rockdale County Fire Marshal's Office approved. **Figure 3** shows a section of the storage warehouse's rack storage.

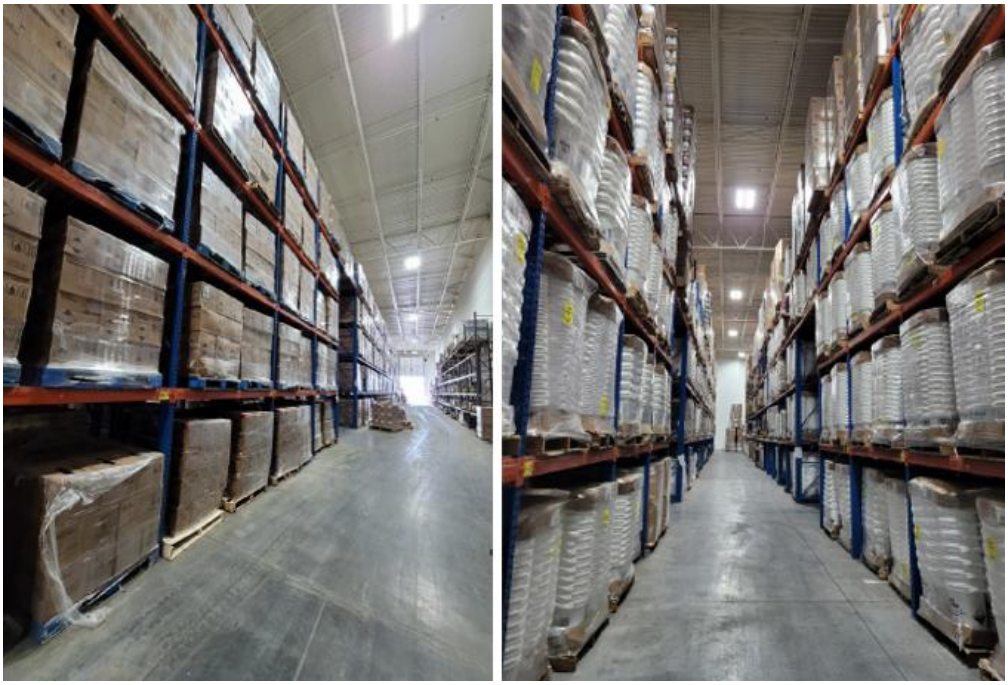

Figure 3: Photos of Warehouse Storage Racks included in a report dated April 2022. (Credit: Bio-Lab)

- Bio-Lab leadership informed the CSB that two or three months prior to the incident, the facility had established a permanent fire watch,[c] 24 hours per day, seven days per week, after detecting strong odors from oxidizers in the storage warehouse and another storage building. Bio-Lab leadership stated that this

[a] The NFPA defines a commodity as "[t]he combination of products, packing materials, and containers that determines commodity classification" [10, pp. 13-22].

[b] The documentation approved by the Rockdale County Fire Marshal's Office states, "the commodity being stored are Class III Commodities consisting of [G]roup A plastics and corrugate stored on wooden pallets." Additionally, Class III commodities may consist of paper, natural fibers, or Group C plastics with or without cartons, boxes, or crates, and are permitted to contain a limited amount of Group B plastics.

[c] The National Fire Protection Association *Life Safety Code* (NFPA 101) 2012 Edition defines fire watch as "The assignment of a person or persons to an area for the express purpose of notifying the fire department, the building occupants, or both of an emergency; preventing a fire from occurring; extinguishing small fires; or protecting the public from fire or life safety dangers" [17, pp. 101-34].

precaution was taken to mitigate potential product decomposition events. At the time of the initial incident, two Bio-Lab employees were present on-site to carry out fire watch duties. Their responsibilities included identifying and managing hazards, detecting early signs of product decomposition or fire hazards, notifying site leadership of any observed leaks or other water intrusions, and contacting the third-party sprinkler company if a sprinkler head was leaking.

Incident Description

- On September 26, 2024, Bio-Lab ceased all on-site operations after Georgia Governor Brian P. Kemp declared a State of Emergency in preparation for Hurricane Helene.

- On September 26 and 27, 2024, approximately 10 inches of rain from Hurricane Helene fell in Conyers [3, p. 2]. The Bio-Lab personnel who were assigned to fire watch onsite on the night of the storm observed roof leaks in the warehouse, which were controlled by and captured with buckets. An employee present at the time of the heaviest rainfall observed that the leaks "never really filled the bucket" used to capture the water, and that it "took a while for it just to cover the bottom of the bucket." No rainfall occurred in the 24 hours prior to the incident on September 29, 2024.

- One of the Bio-Lab employees assigned to fire watch in the storage warehouse explained to the CSB that the dropping of ice from the ice machine could be heard while sitting in the break area because of the ice machine's location. On the morning of the incident, the employee reported hearing a "popping" sound as she stepped out of the break area (**Figure 4**) to begin the 5:00 a.m. round, which she initially believed was the ice machine. However, based on previous experience and training, the employee immediately concluded that the product was wet and called the only other Bio-Lab employee on site, who arrived shortly thereafter. Both TCCA and DCCA produce nitrogen trichloride when wet, which is an explosion hazard, and likely the popping sound heard by the employee. At that time, no flames were observed.

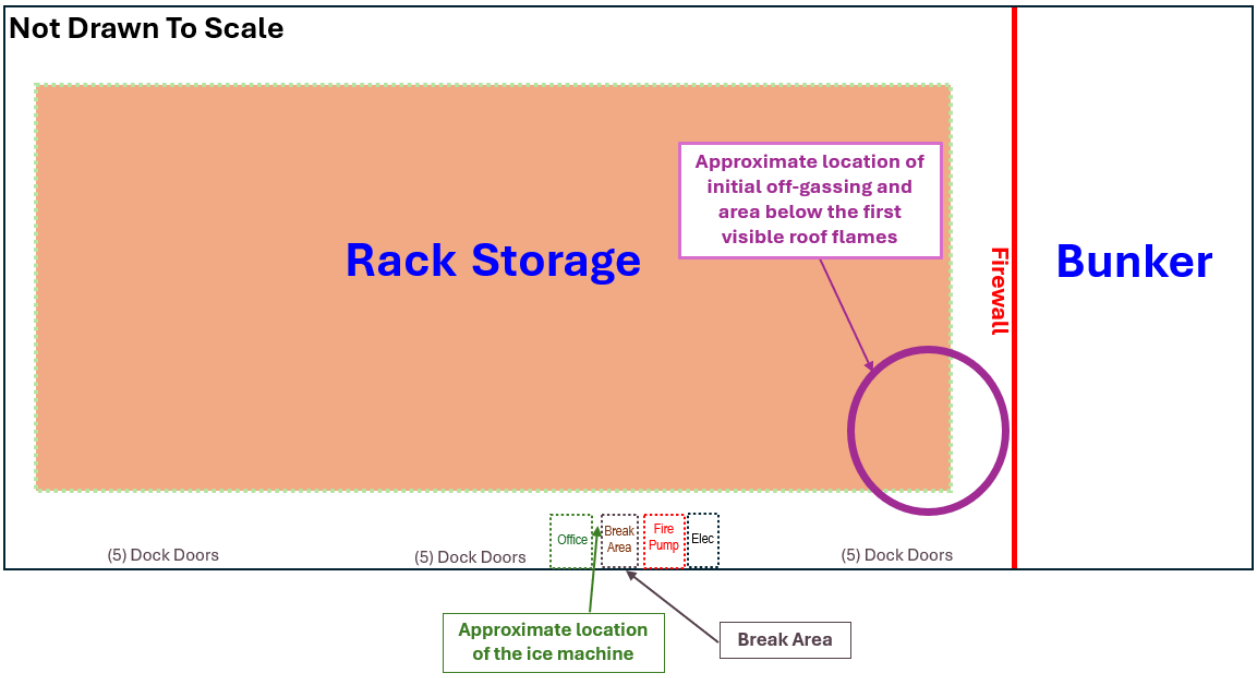

Figure 4. Depiction of the storage warehouse floor plan showing the ice machine's approximate location, Break Area, and area where initial off-gassing was observed. (Credit: CSB)

- At 5:04 a.m., the second Bio-Lab employee manually shut off the fire pump controller but did not close the supply valves. Bio-Lab personnel described to the CSB that they turned off the fire pump controllers to prevent water from reaching the chemicals.[a] However, while turning the fire pump off would reduce the pressure, flow, and overall effectiveness of the sprinkler system, this action would not have prevented the sprinkler system from flowing water. Fire alarm logs indicate that four of the seven sprinkler system zones were in active waterflow status at 5:32 a.m.[b]

- The Bio-Lab employee assigned to fire watch in the storage warehouse called 9-1-1 at approximately 5:10 a.m., and told the CSB, "I just felt heat near the floor" before calling. This decision was made after the smoke grew and there was no visibility inside the building.[c] Initially, the employee informed the 9-1-1 dispatcher that a sprinkler head had burst. However, during an interview with the CSB, the employee stated, "I think that it could've been water off the ceiling. I don't know…but I know water. It had to be water because of the popping sound, from my experience with dealing with the powder." Neither of the two Bio-Lab employees who witnessed the initial off-gassing in the storage warehouse told the CSB that they saw water leaking at the time.

- Both the Rockdale County Fire Rescue ("RCFR") responders and additional Bio-Lab personnel arrived at the warehouse within 30 minutes of the event's discovery, at approximately 5:30 a.m. When two responders entered the building for reconnaissance, both described hearing water falling throughout the building and

[a] Turning off the fire pump controller was the standard Bio-Lab reaction to sprinkler system leaks or failures, indicated in the fire alarm logs for the system as "Fire Pump Power Loss."

[b] The fire alarm monitoring system failed at 5:37 a.m. and would not have registered flow status indicators for additional zones after this time.

[c] No fire was reported when 9-1-1 was called at approximately 5:10 a.m.

noted that a large volume of water was flowing out of the building through the dock doors. Both Bio-Lab and RCFR personnel also had observed large volumes of water running out of the dock doors even before the RCFR respondents flowed any water, suggesting the sprinkler system was activated. Once the sprinkler system was activated, it would continue to flow some water until either the system was completely drained or the water supply to the storage warehouse was completely stopped. **Figure 5** shows the large volume of water flowing out from the warehouse interior through all the dock doors along the full length of the building, except the bunker.

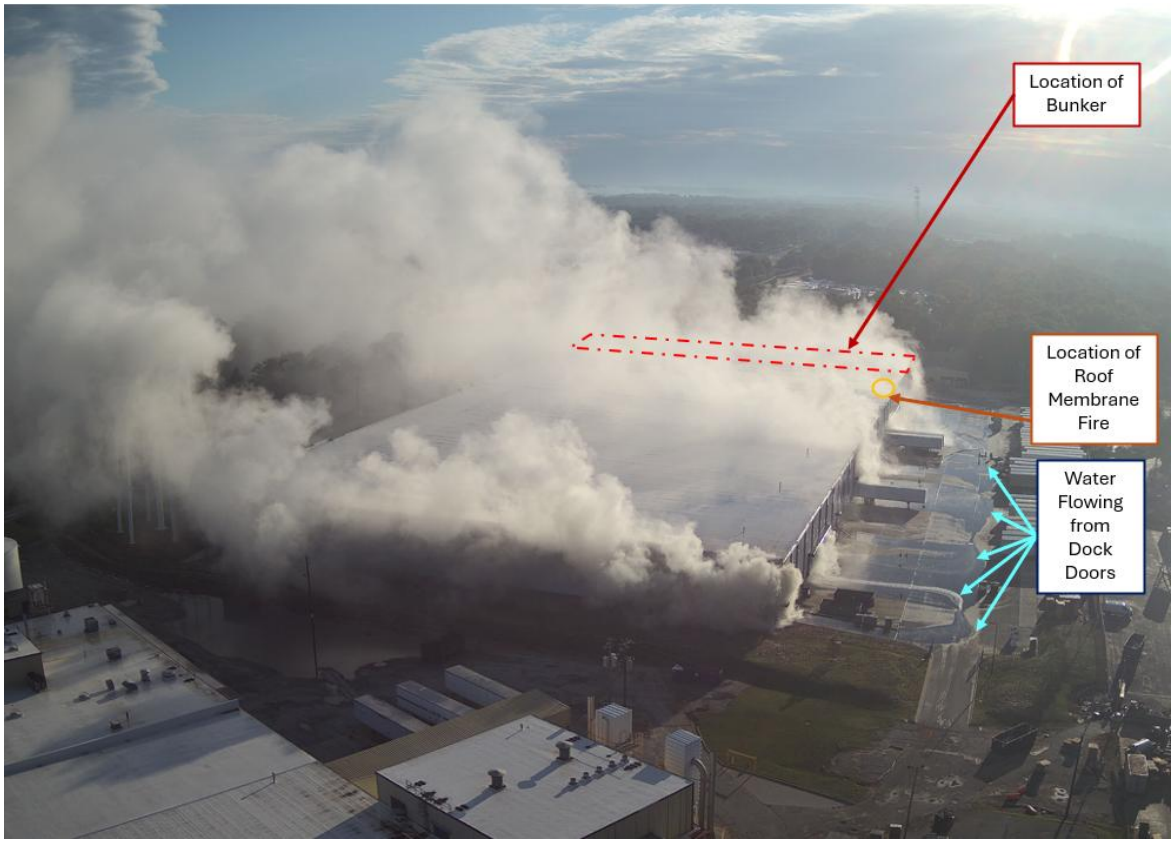

Figure 5. Water Flow from the storage warehouse's interior through dock doors. (Credit: Rockdale County Fire Rescue, annotated by CSB)[a]

- At approximately 6:00 a.m., local emergency services personnel began going door-to-door in Conyers, issuing the first shelter-in-place and evacuation orders directly to residents within the neighborhoods adjacent to the facility.

- At approximately 6:30 a.m., flames were visible on the roof above the area where the employees had observed the reaction and off-gassing. Also, at this time, small flames were first observed inside the building near the area where the two Bio-Lab employees had first observed the chemical reaction and off-gassing. The first

[a] Rockdale County Fire Rescue used their drone to take the picture at 8:41 a.m., showing water still flowing out from the dock doors 30 minutes after the morning fire on the roof was extinguished.

emergency shelter-in-place alert was broadcast through the local Wireless Emergency Alert ("WEA")[a] system via mobile device alert texts to the surrounding community at 7:40 a.m.

- RCFR personnel who responded to the incident informed the CSB that the initial roof fire appeared to be limited only to the plastic-based roof membrane burning due to the heat rising from the burning and off-gassing material below. Although the flames on the roof were first observed at 6:30 a.m., it was not until approximately 8:10 a.m. that the responders extinguished the roof membrane fire by trickling only a small stream of water, estimated by fire rescue personnel as only a "couple gallons." RCFR personnel told the CSB that they wanted to use the minimum amount of water necessary and not wet additional material because of their experience with previous TCCA incidents at Bio-Lab, such as the 2020 Plant 6 fire.[b]

- At approximately 9:30 a.m., due to the large volume of water still flowing from the building, fire rescue responders requested additional assistance to control the runoff from the site, which was entering the creek leading to an adjacent pond. Fire rescue personnel also entered the fire pump room at the building to shut the valves to reduce the water flow from the sprinkler system, as Bio-Lab personnel had only turned off the fire pump controller, but did not close the supply valves.[c] While the flow of water lessened with the pump room valves closed, the water did not stop entirely until the fire department later shut off the building supply valve located outside the building at the road.

- Around noon, a second, larger fire erupted. In the several hours between when the roof membrane fire was extinguished and the second fire began, coordinated efforts focused on RCFR personnel increasing ventilation to the building interior and removing fumes to increase visibility and reduce exposure hazards enough to allow Bio-Lab personnel to safely re-enter with forklifts and remove additional super sacks. The RCFR personnel coordinated with Bio-Lab personnel, who opened the bay doors and removed ground-level exhaust fans with forklifts, while the fire department's ladder trucks removed plexiglass windows along the top of the building on the wall with the dock doors.

- Bio-Lab personnel were able to remove additional super sacks of oxidizer material from the bunker.[d] In total, 59 super sacks were removed from the building.[e] These super sacks were removed from the storage warehouse before it was determined that entering the building was no longer safe due to the onset of a decomposition reaction from material located closer to the center of the warehouse outside the bunker.

- The second larger fire produced thick black smoke, followed by multicolored plumes of smoke. Because TCCA and DCCA produce nitrogen trichloride when wet, which is an explosive material that is unstable when exposed to air, RCFR responders reported observing chemical reactions in the form of "small explosions" with product physically shooting out from the building, as well as hearing "popping" sounds. RCFR personnel

[a] WEAs are "short emergency messages from authorized federal, state, local, tribal and territorial public alerting authorities that can be broadcast from cell towers to any WEA-enabled mobile device in a locally targeted area," as detailed at https://www.fema.gov/emergency-managers/practitioners/integrated-public-alert-warning-system/public/wireless-emergency-alerts.

[b] The CSB also investigated the 2020 Conyers incident as part of its investigation of the 2020 Bio-Lab's Lake Charles facility in Westlake, LA: Bio-Lab 2020 Lake Charles Chemical Fire and Release Investigation Report, April 2023.

[c] Turning off the fire pump controller was the normal Bio-Lab response to sprinkler system leaks or failures.

[d] Bio-Lab management directed its employees to start removing material from the building since "it wasn't smoking too bad."

[e] At the time of the incident, inventory records indicate that approximately 5,000 super sacks were present inside the building, with approximately 4,000 of these super sacks located within the bunker.

explained that they had to relocate one of their engines because it was "getting pummeled" by the reacting product and that "it sounded like you were at the gun range with pow, pow, pow, pow, pow."

- During the second fire, the fire department shut off the building water supply valve from the utility vault at the road to stop the water loss within the building from the sprinkler system from impacting the water supply needed during active firefighting operations.

- By 12:40 p.m., some of the warehouse's exterior had collapsed. Because the building was constructed from concrete slabs that were raised into place and supported by a roof and truss system, the walls lacked the support to remain standing once the roof collapsed. Local officials reported the fire was extinguished at approximately 4:00 p.m.

- The fire destroyed the storage warehouse. By approximately 8:00 p.m., the warehouse roof and most of the walls had collapsed, and firefighting efforts transitioned to extinguishing smaller fire hotspots within the building footprint. At this time, the number of active fire personnel was reduced, and additional excavation support was requested at the site.[a] As shown in **Figure 6**, the purpose of the additional excavation equipment was to allow workers to bring down the remaining damaged wall sections for safety reasons, and to move structural debris within the building footprint to allow emergency response personnel access to extinguish fire hotspots and reacting product within the building debris throughout the night. These activities were focused on controlling the impacts to the community from the ongoing release of fumes from within the building debris. **Figure 6** depicts the hotspots of fire and off-gassing from the super sacks and materials trapped under the building debris during the evening of September 29, 2024.

[a] Bio-Lab engaged external emergency responders who specialize in environmental and hazardous materials response, along with excavation and wrecking equipment to support the suppression and incident response efforts. These resources arrived on September 30, 2024.

Figure 6. Hotspots of fire and off-gassing from super sacks and materials trapped under building debris, the evening of September 29, 2024. (Credit: Rockdale County Fire Rescue)

Post-incident

- After the immediate firefighting response phase of the incident, the emergency response transitioned to a phase of establishing and implementing a controlled demolition of the warehouse to remove the remaining chemicals and structural components for safety and environmental concerns under a Unified Command. This second emergency response phase ended on October 17, 2024.

- Bio-Lab and KIK continued to clean up and remediate the incident scene where the warehouse was located to eliminate off-site contamination and environmental risks from surface water runoff containing metals and other chemicals released from the debris (**Figure 7**), at the request of the Georgia Environmental Protection Division. The Bio-Lab warehouse involved in the September 2024 incident has been demolished (**Figure 8**).

Figure 7. Surface water runoff of metals from rusting structural debris (left) and residual chemicals (right) on the former warehouse's concrete slab (Credit: Bio-Lab).

Figure 8. Concrete slab where the warehouse was located before the 2024 Conyers incident. (Credit: Bio-Lab)

- On May 15, 2025, Bio-Lab announced that it had completed remediation of the Conyers site affected by the incident in September 2024 and decided "to not restart manufacturing at the Conyers plant" [4].[a]

Additional Information

- The source of the water that contacted the stored material and initiated the off-gassing, which was discovered around 5:00 a.m. the morning of September 29, 2024, has not been determined. However, the CSB will continue to gather and analyze information to help identify the most likely water source.

- The impacts from storing corrosive material at the storage warehouse became visible shortly after Bio-Lab started using the new building. TCCA storage began in the storage warehouse bunker on November 5, 2019, and photographs indicated that there was corrosion on metal structure components and sprinkler heads as soon as December 30, 2019. Similarly, corrosion on the fire protection system piping was observed by CSB personnel in February 2025 at the third-party warehouse in Texas, where Bio-Lab began storing TCCA and DCCA in November 2024 after the Bio-Lab Conyers incident.

- Bio-Lab experienced frequent recurrent failures associated with corroding components of the building's fire protection system, particularly in the bunker where the majority of TCCA and DCCA were located. Corroded sprinkler heads within the bunker were documented in Bio-Lab's Annual Inspection reports for 2021 and

[a] https://biolabcommunityresources.com/updates/

2022. Based on these observations, Bio-Lab implemented upgrade projects, and in late 2022, Bio-Lab replaced the original brass-finish sprinkler heads installed inside the storage warehouse bunker with corrosion-resistant sprinkler heads. Additionally, the original fire protection piping couplings and bolts within the bunker were replaced in 2023. After the replacement, no leaks were reported in the bunker.

- Due to the storage of TCCA and DCCA outside the bunker, near the firewall, Bio-Lab personnel also reported observing corrosion on the sprinkler heads outside the bunker, which led to multiple sprinkler head failures and leaks where fire protection piping and pipe couplings were corroded. At the time of the incident, most of the sprinkler heads outside the bunker were still brass-finish heads, as specified and installed during the construction of the storage warehouse in 2019. According to Bio-Lab, the corrosion-resistant sprinkler heads would not provide adequate fire protection for the warehouse rack storage. Therefore, the corroded sprinkler heads outside the bunker were replaced in kind.

- Multiple sprinkler system failures occurred outside the bunker in the months leading up to the September 2024 incident due to the corrosion of sprinkler system components at the storage warehouse. On July 16 and 17, 2024, emergency repairs were performed to repair a hole in the fire protection piping in the storage warehouse. In September 2024, several leaking sprinkler heads were reported at the warehouse, and emergency repairs were performed to replace multiple corroded sprinkler heads on September 13 and September 17 through 20, 2024. No information is available as to the amount of water released during these events, whether oxidizer material was wetted as a result, or the total number of sprinkler heads replaced. Bio-Lab told the CSB that their vendor was promptly engaged to make the necessary repairs, and the vendor told the CSB that they promptly responded to calls for repair.

- KIK requires each of its facilities, including Bio-Lab Conyers (**Figure 9**), to have a site-specific Emergency Response Plan ("ERP") that outlines procedures for handling small releases of hazardous waste or hazardous materials. The Bio-Lab Conyer's ERP states, "The ERT [Emergency Response Team] will be activated in case of emergency such as employee injury, fire, explosion, or release of hazardous waste or hazardous materials. The On Scene Commander will decide if notification to outside response agencies is warranted." On September 29, 2024, Bio-Lab Conyers personnel followed its ERP. The Bio-Lab employee who discovered the incident first contacted the second employee on-site, who is a member of the Emergency Response Team ("ERT"), then notified the other ERT members and certain Bio-Lab Conyers leaders not present on-site. Additionally, external response agencies, including 9-1-1, were notified.[a]

[a] National Response Center Incident Report #1412236 and Accident Release Report sent to the CSB pursuant to 40 CFR 1604.

Figure 9. Bio-Lab Conyers. (Credit: CSB)

Path Forward

- The CSB is continuing to gather facts and analyze several key areas, including:
    - Testing the solid oxidizer(s) to quantify their water reactivity characteristics, including the heat of mixing, thermal stability, and fully define the conditions where the material behaves hazardously upon contact with water
    - Information and evidence to help determine the most likely water source that initiated the chemical reaction
    - Storage and handling of oxidizers that also have water-reactive characteristics
    - Regulatory and Industry guidance on storage and handling of reactive materials
    - Regulatory and Industry guidance on design, maintenance, and inspection of fire protection systems
- The investigation is ongoing. Complete findings, analyses, and recommendations, if appropriate, will be detailed in the CSB's final investigation report.

References

[1] Rockdale County Government Facebook, "Update: Press Conference regarding to [sic] today's incident at Bio-Lab," Rockdale County Government Rockdale County Sheriff's Office Rockdale County Emergency Management Agency - RC EMA City of Conyers, GA, 29 September 2024. [Online]. Available: https://www.facebook.com/RockdaleGov/videos/update-press-conference-regarding-to-todays-incident-at-bio-labrockdale-county-g/506209848917302/. [Accessed 21 April 2025].

[2] National Fire Protection Association, "NFPA 400: Hazardous Materials Code (2025 Edition)," 2024.

[3] National Weather Service, National Oceanic and Atmospheric Administration, "Hurricane Helene: Record-Breaking Rainfall and Historic Flooding," [Online]. Available: https://www.weather.gov/mrx/Hurricane_Helene. [Accessed 13 March 2025].

[4] BioLab, "May 15, 2025 12:00 PM BioLab Provides Update on Site Remediation and Manufacturing Operations," 15 May 2025. [Online]. Available: https://biolabcommunityresources.com/updates/. [Accessed 19 May 2025].

[5] J. Tomac, Dictionary of Materials and Testing, 2nd Edition, SAE International, 2000.

[6] National Fire Protection Association, "NFPA 221: Standard for High Challenge Fire Walls, Fire Walls, and Fire Barrier Walls," 2024.

[7] U.S. Environmental Protection Agency (EPA), "Chlorine - U.S. Environmental Protection Agency," 2016. [Online]. Available: https://www.epa.gov/sites/default/files/2016-09/documents/chlorine.pdf. [Accessed 14 November 2024].

[8] National Fire Protection Association, "Hazardous Chemicals Data Compilation," in *Fire Protection Guide to Hazardous Materials 14th Edition*, 2010, pp. 49-148.

[9] National Fire Protection Association, "After Georgia Chemical Plant Fire, Learn More About the Hazards of Oxidizers," 11 October 2024. [Online]. Available: https://www.nfpa.org/news-blogs-and-articles/blogs/2024/10/11/georgia-chemical-plant-fire-and-oxidizers. [Accessed 3 April 2025].

[10] National Fire Protection Association, "NFPA 13: Standard for the Installation of Sprinkler Systems (2025 Edition)," 2024.

[11] Hodgson, Peter and Donnell Christian, F is for Fire: A Dictionary of Key Fire Terminology, BSI Standards, 2007.

[12] R. Westbrook, "Comparing the Different Types of Fire Sprinkler Systems," American Fire Protection Group, Inc., 2020. [Online]. Available: https://www.afpgusa.com/blog/comparing-the-different-types-of-fire-sprinkler-systems/. [Accessed 25 November 2020].

[13] "Comparing the Different Types of Fire Sprinkler Systems," American Fire Protection Group, Inc., [Online]. Available: https://www.afpgusa.com/blog/comparing-the-different-types-of-fire-sprinkler-systems/. [Accessed 21 April 2025].

[14] International Code Council, "International Fire Code Section 2 Definitions," 2024.

[15] Merriam-Webster.com Dictionary, "Available chlorine"," Merriam-Webster, [Online]. Available: https://www.merriam-webster.com/dictionary/available%20chlorine. [Accessed 30 April 2025].

[16] J. Daintith, Dictionary of Chemistry (6th Edition), Oxford University Press, 2008.

[17] National Fire Protection Association, "NFPA 101: Life Safety Code, 2024 Edition," 2023.