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Commerce City Planning Department
7887 East 60th Ave.
Commerce City, CO 80022

5-Sep-2018

Subject: Statement of Operations for BASF Brighton, CO Facility

To Whom It May Concern:

This cover letter prefaces the updated Statement of Operations regarding the Conditional Use Permit to add a parking lot on the BASF property located at 10601 Fulton Street, Brighton, CO. This property is the location for the BASF Construction Chemicals manufacturing facility that began operation in 1997 and was annexed by Commerce City in the early 2000's.

Due to the proprietary and confidential nature of the chemical operations that take place within the facility, limited details regarding the process are able to be documented for distribution to ensure protection of patented intellectual property. If you have any questions or need additional information, please do not hesitate to contact me at the below phone number and e-mail address.

Sincerely,

Seth Myers, P.E.
Project/Process Engineer
BASF Corporation
(303) 227-7075
Seth.Myers@basf.com

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Overview of Existing Operations

BASF SE is a German owned company and is the largest chemical producer in the world. It is comprised of subsidiaries and joint ventures in more than 80 countries and operates six integrated production sites and 390 standalone production facilities in the Americas, Europe, Asia, Australia, and Africa. BASF Corporation, the Americas subsidiary headquartered in Florham Park, NJ, is the largest affiliate of BASF SE and is the second largest producer and marketer of chemicals and related products in North America. It operates in a variety of business segments including the Construction Chemicals division, which supplies waterproofing solutions, concrete admixtures, performance grouts and wall systems that are produced at over 20 different manufacturing facilities across North and South America.

The BASF Construction Chemicals facility in Brighton, CO has been manufacturing high performance polyurethane waterproofing solutions for new construction, maintenance, repair and renovation of structures since 1997. While originally permitted under Adams County, the property was annexed by Commerce City in the early 2000's and is currently designated as "Existing Non-Conformance", thus requiring a Conditional Use Permit under Commerce City, CO for chemical manufacturing of glue, gelatin (animal), or caulking compound (NAICS code 32552).

The 150,000-square foot building contains manufacturing, raw material and finished goods storage areas. BASF's urethane sealant and waterproof coatings manufacturing process is comprised of the following:

- 21 aboveground raw material storage tanks
- 4 underground raw material storage tanks
- 4 pre-production batch mixers
- 2 intermediate batch mixers
- 19 intermediate holding tanks
- 8 finish batch mixers
- 14 product packaging lines

There are 4 truck dock bays to handle shipping and receiving activities and 3 bulk receiving locations for raw materials (2 for trucks and 1 for railcars). Utilities for the facility include 4 air compressors, two boilers, two process chillers and 4 HVAC units. In addition to the manufacturing process, a pigment blending area is utilized to combine base pigment materials to produce multiple final product colors.

To support production, the site also houses maintenance, quality control laboratory and management office areas.

A narrative of the operations that occur on site

The proposed addition of a parking lot will accommodate BASF employee parking in a new area that will help prevent ice and snow accumulation and improve safety for employees. The area is an adjacent plot of land that is owned by BASF and is to be combined into a single plat with the production plant facilities.

To start the urethane manufacturing process, liquid raw materials and solid fillers are combined in pre-production batch mixers to produce intermediate prepolymers for all the various forms of finished products (one-part, multi-component, self-leveling and vertical applications). Prepolymers are then reacted to produce a thixotropic (thickened) product, mixed with performance additives and pigmented in finish batch mixers to result in the final products. The material is then processed through one of 14 packaging lines into either fiber cartridges, foil propaks or pails for sale to commercial customers nationwide via several distribution centers located outside of Colorado.

BASF Corporation
Construction Chemicals
10601 Fulton Street
Brighton, CO 80601
Telephone (303) 288-8123

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Hours and days of operations

Operations runs on two 12-hour shifts, 24 hours/day and 7 days per week. Management, administrative and support personnel work Monday through Friday from 8 am to 5 pm.

Number of employees

Total number of shift and supporting employees is 145, with a maximum of 70 employees onsite at any given time.

Number of parking spaces required and provided

Peak parking required during shift change is 70 spaces. Proposed spaces provided including the new lot is 117.

Average daily peak trips generated

Not Applicable

Type of equipment or process that are used

The plant primarily utilizes batch mixers for manufacturing of intermediate and finished products. There is a future project that will shift a portion of the production from batch to continuous processing to improve overall efficiency and reduce potential batch to batch quality variations.

The description and process for storing or handling any hazardous materials

Some of the materials produced by BASF in Brighton, CO use isocyanates as part of the chemistry to create high performance weather resistant sealants and coatings. These raw materials are stored in bulk tanks and automatically supplied to the process via a plant control system. In addition to strict internal BASF policies and procedures, the portion of production associated with isocyanates is installed and managed with adherence to the Risk Management Plan (RMP) outlined by the EPA. All applicable processing is contained in an H-Occupancy area per International Building Code requirements. Supplementary information regarding handling of hazardous information can be found in the attached BASF Brighton Integrated Contingency Plan, including detailed information on emergency response handling and internal training.

A list of any regulating agencies with inspection information

OSHA, EPA and CDPHE

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BASF BRIGHTON INTEGRATED CONTINGENCY PLAN

BASF CORPORATION
10601 Fulton Street
Brighton, CO

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PURPOSE AND SCOPE OF EMERGENCY RESPONSE PLAN

It is the policy of BASF to operate in a safe manner with minimum risk to employees, contractors and visitors on-site and to the surrounding community and environment. While there is strong emphasis on the prevention of accidents, the site is also committed to being prepared to respond to emergencies in order to minimize damage to human health and the environment, both on and off site.

The purpose of this plan is to define the emergency organization and establish appropriate response procedures that will be activated in the event of emergency at the site, which, if uncontrolled, could pose a threat to human health or the environment. The specific emergency response procedures are intended to minimize hazards to human health and/or the environment from a fire or explosion, spills, or work related or non-work related medical situations. The plan authors can be contacted to obtain additional information on the content of the ER plan or an explanation of their duties and responsibilities under the plan.

The contingency plan includes a general description of the site, hazardous waste management practices, the individuals who are responsible for coordinating all emergency response measures, designated individuals to assist in emergencies, the types of potential emergencies, emergency response procedures, arrangements with local authorities and other resources, emergency equipment, evacuation plans, and post-emergency procedures.

2.0 IMPLEMENTATION OF PLAN

The decision on how to implement the site emergency response procedures will be made by the on scene incident commander once on the scene and after an evaluation of the situation. The decision will be based on the actual or imminent threat to human health or the environment posed by an event that cannot be controlled and remedied by personnel and resources onsite; or that implementation is required by regulation.

Some of the types of emergencies that would call for full implementation of the contingency plan include:

- A fire occurs that is too large to extinguish with a portable fire extinguisher or that could spread offsite;
- A spill or release that may impact the surrounding community;
- A utility outage;
- Bomb threat;

- An off-site event such as a train derailment or civil disturbance that may impact the site
- A severe or multiple injuries
- Severe weather, such as a tornado; and
- Any other emergency that may require activation of the plan

BASF Corporation has provided copies of the Brighton Emergency Response Procedures Manual to the Adams County Fire and Sheriff's Departments, The Adams County Office of Emergency Management Agency and the Platte Valley Medical Center.

3.0 EMERGENCY RESPONSE TEAM AND COORDINATION WITH OUTSIDE EMERGENCY

All employees are trained annually on the facility emergency procedures. Employees are instructed to contact the Production Supervisor in order to make contact with the Emergency Response Team (ERT). Any employee can initiate appropriate elements of the plan upon discovery, notification or observance of a situation contained herein. The employee has a duty to warn others, secure the area, and notify their supervisor or the Site Manager. The Site Manager or Designated Personnel will be informed and direct tasks needed to properly respond to the event. The Site Manager or Designated Personnel has ultimate control of the site until relieved of their duties. Additional assistance from outside services and agencies will be available to assist in the response. Attachment B lists contact information for various response agencies for this site. BCC Operations and EHS personnel will be available via telephone to assist with Site Manager or Designated Personnel concerns when they arise.

Attachment C is a diagram of a possible response organizational structure and Attachment D is a written description of possible functions within the response. Different events may require the implementation of various functions. The Site Manager or Designated Personnel must be aware of each function and how it could impact the outcome of the response. They must remember that outside assistance should be obtained immediately if the site does not have the manpower to effectively manage the needed functions.

3.1 Emergency Response Team (ERT) Training

The ERT is composed of site employees trained to respond to spill, release and first aid emergencies. The list of the individual team members is maintained by the ERT Coordinator. Prior to placement on the ERT, each member is required to be medically cleared to wear SCBA in conformance to the BC009.008 (HAZWOPPER Medical

Surveillance Program) and BC009.011 (Respirator Medical Clearance Program). The ERT is provided training designed to ensure that each individual is familiar with the contingency plan, type of hazardous materials on site, location of container storage areas, and characteristics of how the hazardous waste is managed. The ERT responsibilities are further discussed in detail in section 2.2, which includes contacting appropriate personnel necessary to respond, coordinating activities during an emergency, and providing any and all support necessary as required by the Site Emergency Coordinator. The Site Emergency Coordinator is a trained member of the ERT. In the event off-site intervention is necessary, a representative from the Adams Fire Department or Office of Emergency Management Agency will become the Site Emergency Coordinator.

The active ERT members meet the training requirements outlined in the BASF Global Directive for Emergency Response Training, Awareness and Competency, which is in alignment with the OSHA HAZWOPPER Standard, 1910.120.

3.2 ERT Member Responsibilities

First Responder Awareness Level

First responders at the awareness level are those persons who, in the course of their normal duties, could be the first on the scene involving a hazardous materials emergency. First responders at the awareness level are expected to recognize the presence of hazardous materials, protect themselves, call for trained personnel, and secure the area.

First Responder Operations Level

First responders at the operational level are those persons who respond to releases or potential releases of hazardous materials as part of the initial response to the incident for the purpose of protecting nearby persons, the environment, or property from the effects of the release. First responders at the operational level are expected to respond in a defensive fashion to control the release from a safe distance and keep it from spreading.

Hazardous Materials Technician

Hazardous materials technicians are those persons who respond to a release or potential release of a hazardous material for the purpose of controlling the release. Hazardous materials technicians are expected to use specialized chemical protective clothing and specialized control equipment.

Hazardous Materials Specialist

Hazardous materials specialists are individuals who respond with and provide support to hazardous materials technicians. Their duties parallel those of the hazardous materials technician, however, those duties require a more directed or specific knowledge of the various substances they may be called upon to contain. The hazardous materials

specialist would also act as the site liaison with Federal, state, local and other government authorities in regards to site activities.

Incident Commander (IC)

The emergency coordinator is that person who will assume control of the incident, beyond the first responder awareness level. The emergency coordinator, who will assume control of the incident scene beyond the first responder operation level, shall receive training as outlined above and, in addition, have competency in the following areas and the employer shall so certify:

- Know and be able to implement the employer's incident command system;
- Know and be able to implement the employer's emergency response plan;
- Know and understand the hazards and risks associated with employees working in chemical protective clothing;
- Know how to implement the local emergency response plan;
- Know of the state emergency response plan and of the Federal Regional Response Team and
- Know and understand the importance of decontamination procedures.

A roster of ERT members is found in Attachment F.

3.3 Emergency Coordinator Responsibilities

The primary site emergency contact for the site is the shift Production Supervisor on site at the time of the incident. The incident commander with support from ERT is responsible for assessing the possible hazards, direct and indirect, to human health and the environment from the ongoing emergency. The assessment evaluation will include the specific nature of the incident, the time of day, weather conditions, and the location of the emergency. If the assessment concludes there is a threat to human health or the environment the IC, in addition to coordinating emergency response activities, will further assess if an evacuation of the site is advisable and will notify the appropriate authorities. The Adams County Fire Chief or Sheriff's Department will assess the need for evacuation of the local area based on information provided.

EMERGENCY MANAGEMENT TEAM

(FIRE, INJURY/ILLNESS, EXPLOSION

NAME	POSITION	HOME PHONE	WORK PHONE	MOBILE
William Hack	Site Manager	409-840-4452	303-227-7070	720-597-1237
Gilbert Perez	Production Specialist	303-908-7985	303-227-7061	303-746-2947
Chastity Jefferson	EHS Specialist	720-541-7781	720-466-6971	314-330-3481

3.4 Local Resources

BASF Corporation has provided copies of the Brighton Emergency Response Procedures Manual to the Adams County Fire and Sheriff's Departments, The Adams County Office of Emergency Management Agency and the Platte Valley Medical Center.

At a minimum, the site annually conducts emergency drills and exercises to test their emergency preparedness. Periodically, the site will partner with the Adams County Hazmat Team and County Mutual Aid entities to learn how to effectively deploy the contingency plan.

3.4.1 Organizational Structure

Attachment C is a diagram of a possible response organizational structure and **Attachment D** is a written description of possible functions within the response. Different events may require the implementation of various functions. The Site Manager, Designated Personnel, and Incident Commander must be aware of each function and how it could impact the outcome of the response. They must remember that outside assistance should be obtained immediately if the site does not have the manpower to effectively manage the needed functions.

3.5 Emergency Training and Exercises

Experience gained through exercises and training serves to improve plans and both individual and team performance. Every training session requires a critique to evaluate all aspects of the event. Corrective actions formulated in the critique session must be documented.

3.5.1 Individual Training

All production personnel must be trained on safe evacuation procedures. Members of the Emergency Response Team (ERT) must be trained and comply with specific responsibilities in an emergency and employ remediation techniques. All production personnel are trained to the HAZWOPER Awareness level. Every year awareness training and incidental spill training is conducted to verify competency in handling small hazmat spills in production areas.

All new employees will receive new employee orientation per the new employee orientation checklist. Before commencing any work, all contractors will be trained on this procedure by the BASF Contact.

3.5.2 Tabletop Exercises

In addition to Full Scale Exercises, the Brighton site may conduct tabletop exercises for a likely emergency scenario that include production personnel and management.

3.5.3 Full Scale Exercises

Annually, the Brighton site will conduct one or more of the following exercises:

- First Aid
- Spill greater than incidental
- Shelter in place
- Active shooter

3.5.4 Evacuation Drills

Annually, the Brighton site will conduct an evacuation drill.

3.6 Contractors

In the event that additional resources are needed to respond to or clean up a release, the following contractor is to be contacted:

Veolia Environmental Services
1-800-688-4005

Clean Harbors
1-800-645-8265

4.0 EMERGENCY COORDINATOR EVENT REPORTING PROCESS

When a release or malfunction is observed the employee is to notify the Shift Supervisor immediately. The supervisor is to contact the following people, who will be responsible for making the notification:

Death or injury requiring hospital admission	**>RQ Spill to Soil**	**>RQ Spill to Air**	**Fire – involving fire dept response**	**Event attracts significant public attention**	**>$50,000 loss of business or damage**
A, B, and C	A, B, C	A, B, C	A, B, C	A, B, C, D	A, B, C
-Site EHS	-Site EHS	-Site EHS	-Site EHS	-Site EHS	-Site EHS
	-National Response Center* (800) 424-8802	-National Response Center* (800)424-8802			

	-Adams County LEPC Disaster and emergency services 720-523-6602	-Adams County LEPC Disaster and emergency services 720-523-6602			
	-Colorado Division of Emergency Management 720-852-6607	-Colorado Division of Emergency Management 720-852-6607			

CONTACTS	PHONE INFORMATION
A = BASF Emergency Response Center	(800) 832-4357
B = Bill Hack, Site Manager	(303) 227-7070, (720) 597-1237 cell
C = Erin Fria, Production Manager	(303) 227-7074, (720) 745-0626 cell;
D = David White, BASF david.b.white@basf.com	(973) 245-6208, (973) 262-7591 cell;
Site EHS = Chastity Jefferson	(720) 466-6981, (314) 330-3481 cell

*** Indicates immediate notification (within 15 min)**

WHAT TO INCLUDE IN YOUR PHONE CALL

1. Name & phone # of caller; time and type of incident (fire, spill, etc.)
2. Name & address of facility and extent of injuries (if any).
3. Name & quantity of material involved (to the extent known)
4. Possible extent of hazards to human health & environment.

5.0 EXTERNAL NOTIFICATION PROCESS

5.1 Fire

When a fire has been reported, the incident commander should do the following:

1. **IMMEDIATELY** notify the South Adams County Fire Stations by calling 911.
2. Read the following information to the South Adams County Fire Station Dispatcher (read slowly and clearly).

"THIS IS (YOUR NAME) AT BASF CORPORATION WE ARE LOCATED AT 10601 Fulton STREET. A FIRE HAS BEEN DETECTED IN (LOCATION). WE REQUIRE ASSISTANCE."

Do not hang up the phone until the dispatcher has acknowledged your message.

3. When the South Adams County Fire Station Dispatcher has acknowledged your message, proceed as follows:
   a. Notify ERT
   b. Follow any instructions given by the South Adams County Fire Department.
4. The South Adams County Fire Department will determine if the situation necessitates an evacuation of the surrounding offsite area. See Appendix C for list of surrounding neighbors contact if a potential emergency situation arise.

5. The South Adams County Fire Department will be responsible for giving instructions regarding the notification of other local emergency personnel. This will include additional firefighting equipment, local police, and emergency medical personnel.
6. Offer whatever additional assistance and information that may be required.

5.2 Other Local External Contacts

See Appendix B

5.3 Reportable Quantity Release

Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) requires that immediate notification (within fifteen minutes) be made to the National Response Center whenever there is a release of hazardous substance into the environment in amounts equal to or greater than the "reportable quantity." This notification will be made by the primary IC or alternate at the time of the emergency. The 24-hour toll free telephone number is **1-800 424-8802**.

Information to be given during the notification is as follows:

- Address / Location of Release
- Date / Time of Release
- Type of Material Discharged
- Estimates of Quantity
- Source of Discharge
- Effected Media
- Cause
- Weather conditions
- Any Damages and Injuries
- Actions to stop and mitigate the effects of the release.
- Evacuations, if required
- Contact name and phone number

  Record date, time, person contacted and any confirmation number.

A list of reportable quantities Chemicals is below:

CHEMICAL	CERCLA RQ
TDI	100 LB
MDI	5000 LB
Ethyl benzene	1000 LB
Xylene	100 LB
Toluene	1000 LB

Reportable quantity releases must also be reported to the Colorado Department of Public Health and Environment and the Adams County Office of Emergency Management.

5.3.2 Oil / Hazardous Waste Spill Reporting

If there is an oil or hazardous waste release offsite, notifications to the National Response Center and the Adams County Office of Emergency Management will need to be made. The Reportable Quantity (RQ) for the discharge of oil into or upon navigable waters is an amount which causes a visible film or sheen upon the surface of the water.

Contact numbers are as follows:

National Response Center	800-424-8802
Adams County Office of Emergency Management	720-523-6602
Colorado Division of Emergency Management	720-852-6607

Information to be given during the notification is as follows:

- Address / Location of Release
- Date / Time of Release.
- Type of Material Discharged
- Estimates of Quantity
- Source of Discharge
- Effected Media
- Cause
- Weather conditions
- Any Damages and Injuries
- Actions to stop and mitigate the effects of the release.
- Evacuations, if required
- Contact name and phone number
  Record date, time, person contacted and any confirmation number.

5.3.3 Follow Up Reporting

Further, 40 CFR 264.56(j) and OAC 3745-65-56(j) state that any hazardous waste emergency event requiring implementation of the contingency plan will be reported in writing within 15 days of its occurrence to the OEPA Director and the Regional Administrator of U.S. EPA Region VIII

Reports are to be addressed to:

Mr. Greg Stasinos, CEPC Co-Chair
Colorado Dept. of Public Health and Environment

4300 Cherry Creek Drive South
Denver, CO 80246

Phone: 303-692-3023
Email: Greg Stasinos (greg.stasinos@state.co.us)

Regional Administrator
USEPA
Region VIII
Environmental Protection Agency
1595 Wynkoop St,
Denver, CO 80202
1-800-424-8802

The following information is required in the report:

- Address and phone number of owner or operator
- Date / Time of Release.
- Type of Material Discharged
- Estimates of Quantity
- Injuries
- Effected Media
- Assessment of actual or potential hazards to human health or the environment

6.0 RESPONSE TO EMERGENCY AND NON-EMERGENCY PLANT SITUATIONS

6.1 Fires

Fires (Small Scale) - These fires are such that it will be possible to extinguish them without exposing plant personnel and equipment to potentially greater injury or property damage. These fires can be handled by plant personnel with the use of a fire extinguisher.

Fires (Large Scale including explosions) - These fires are such that they will require the use of outside professional services. These fires pose an immediate danger to employee and property. The Incident Commander is to call 911 and use the notification requirements in Section 5.1. Evacuation of site personnel should commence. Once the fire department arrives on site, the fire chief becomes the Incident commander. BASF incident commander member still has a responsibility to provide information and recommend a course of action to the fire chief.

6.1.1 Fire Water

To date the site has not had a discharge of fire water.

The entire BASF property drains to an earthen storm water retention area located on the west side of the facility property. The retention area is surrounded on three sides by a one-foot high earthen berm with a holding capacity of 276 million gallons. The system is non-discharging and is not equipped with any discharge controls. In the event that the site fire suppression system is activated, all extinguishing waters will drain to the retention area for collection prior to being tested and disposed of according to Section III of the SPCC plan.

Hydraulics information from the fire suppression system supply test by South Adams City Water on 2-3-97 states a maximum available flow of approximately 3400 gpm at 61.3 psig. With the retention capacity of 276 million gallons available on the property, the containment can provide adequate storage of fire extinguishing waters for over 1350 hours of operation.
(276,000,000 gal) / (3400 gpm) / (60 min/hr) = 1352.9 hr retention capacity

6.2 Security Event

An employee who becomes aware of a security incident should call their Shift Supervisor. The shift supervisor is to contact site security contact (Maintenance Supervisor); who will determine what actions and notifications. A list of security events can be found in Section 4.2.1 of BASF procedure BC01005.

BASF requirements for security, prohibition against violence and security incident reporting are found in the following BASF procedures:

BC018	Security Policy
BC018005	Security Incident Reporting
BC036	Prohibition against Violence, Threats or Intimidation

6.2.1 Bomb Threat

In the event of a bomb threat, please use the attached checklist to gather as much information from the caller as possible.

6.2.2 Civil Disturbances

In the event a civil disturbance, such as a riot, occurs:

- The Site Manager will contact the Adams County Sheriff's Department for official actions and monitor the situation and determine how this might impact the facility and personnel.
- The Site Manager will decide what actions to take to protect the plant personnel and the site.

6.3 Medical – Personal

Notify the shift supervisor and request an ambulance and aid from site trained first responders. Arrange to have the appropriate plant gates open. Assign personnel to direct the ambulance to the person. Department Personnel will contact management and inform

them of the situation. The Human Resource Department is responsible to determine if the employee's family is to be notified and, if so, to make the notification.

If applicable, ensure that the bloodborne pathogen procedures have been followed.

6.4 Medical – Work Related

6.4.1 Serious

If the injury is suspected of being serious call the shift supervisor and request an ambulance and ERT. The ERT will provide First Responder Medical Assistance. Arrange to have the appropriate plant gates open. Assign personnel to direct the ambulance to the person. Department Personnel will contact management and inform them of the situation.

If chemicals are involved, provide SDS's to the EMT's and to Emergency Room personnel. At the Brighton site, only one chemical agent is currently listed with BASF specific chemical emergency medical guidelines. This agent is Isocyanates. Any personnel involved in chemical medical emergencies involving Isocyanates should be aware of the following documents which describe specific actions to take in addressing employee chemical exposure. These documents should also be provided to the respective parties noted to aid in proper medical response. (Appendix A)

- First Aiders – Isocyanate Medical Response Information
- Paramedics & Emergency Responders – Isocyanate Medical Response Information
- Hospitals & Physicians – Isocyanate Medical Response Information
- Patients – Isocyanate Medical Response Information

Provide the BASF Medical Guidelines to the EMT's and Emergency Room personnel if chemicals are involved. These documents can be found in Attachment G.

The Human Resource Department is responsible to determine if the employee's family is to be notified and, if so, to make the notification.

6.4.2 Non-life Threatening and an Ambulance is not required

The Shift supervisor will help determine if job reassignment or medical care is needed. If care beyond first aid is needed Peak Form Occupational Clinic personnel can be contacted for advice or to arrange an evaluation or the BASF nurse line during off peak hours at 1- 855-402-7348

Peak Form Clinic
1093 E Bridge St
Brighton, CO 80601
303-292-0034

The PA will do drug and alcohol screening if requested. **Note: HR approval is required before the administration of any drug or alcohol test.**

If chemicals are involved, provide SDS's to clinic personnel. Ensure clinic personnel have the BASF medical guidelines for the sites chemicals.

Preserve the incident scene and monitor for bloodborne pathogens.

6.5 Tornado or Other Severe Weather Event

When threatening weather if forecasted, the shift supervisor shall monitor weather conditions as they progress. When a tornado warning issued by the National Weather Service, the person hearing the warning should notify the shift supervisor, who will make the decision if the warning applies to the immediate area. As soon as a warning is issued each department shall undertake the following actions:

- Check the designated shelter area to be sure that it is available.
- Secure loose objects.
- Close all windows.
- Close all interior and exterior doors.
- Designated department employee will carry a plant radio, plant cell phone and/or be available by phone.

The Brighton site is located with the boundaries of Commerce City and as such is impacted by the weather alert system established by Commerce City. The Commerce City weather alert system consists of a series of alarm towers set up throughout the area. The warning tower system is activated when the National Weather Service (NWS) issues a Tornado Warning anywhere within the city boundaries. A Tornado Warning is issued when a tornado has been sighted or indicated by weather radar within the warning area.

When the City's Warning Tower System is activated, the warning alert consists of three cycles of a 1-minute siren wail tone followed by a verbal warning message in both English and Spanish. The verbal warning message will state "Warning, a tornado warning has been issued for your location. Please take shelter immediately." Once the threat has passed, then an "All Clear" message will be issued. The "All Clear" message consists of an alert tone for 5 seconds followed by a verbal "All Clear" message in both English and Spanish. The verbal "All Clear" message will state "All clear, the emergency is over." The verbal "All Clear" message will be repeated twice.

Since the Commerce City system activates all sirens simultaneously, this is only an indication that a tornado has been spotted in the area. It does not mean that a tornado is directly approaching the site. As such, site supervision needs to approach any alarm condition as a potential threat only that warrants further attention. Through direct visual observation of weather conditions in the area in combination with live weather radar, the site can better determine if the real threat exists to the site, and if personnel need to move to the shelter location.

The tornado shelter at the Brighton site is located in the main Admin office area of the site. Within the main office area, the following areas have been identified to provide the greatest protection: Aspen Conference room, Kitchen, Men's and Women's bathrooms. Personnel should attempt to situate in these areas.

Site personnel should report to the tornado shelter area while still wearing their hard hats and safety glasses for added protection. Additional hard hats and safety glasses are available if needed.

Site supervision will communicate with personnel via plant radios and the PA system that a tornado threat exists and that all personnel are to proceed to the tornado shelter area.

The Brighton site has weather radios set up in all main departments including main office, shipping, maintenance, pigments, operations, and QC lab. These radios have been set up to provide an early warning to tornado or severe weather activity. The alerting systems set up on these radios cover a broad area. If a radio does alarm, supervision shall take the threat seriously, but utilize other resources including visual observation of weather conditions as well as observation of live radar to see where the storm will impact. If conditions clearly show a threat to the site, supervision will have personnel proceed to the tornado shelter area.

A headcount will be taken. When the tornado warning is over, an all-clear will be announced. If it is safe to do so employees may return to their departments. They are to inform the Team Leaders or supervisor of any damage.

6.6 Utility Outages

6.6.1 Electrical

Restart necessary equipment, per procedure, when power has been restored after an electrical outage. The production engineer(s) is responsible for:

- Determining the duration of the outage.
- Assuring corrective actions are taken.
- Assessing any damage

6.6.2 V-65B Cold Storage Room

If power is lost for the V-65B cold storage room or the high temperature alarm is activated, the door must remain closed in order to prevent a rise in temperature. The maintenance department must be notified in order to monitor the temperature of the room and to determine if a backup generator is required (extended power outage).

Reference the material's SDS for relevant data on decomposition temperature and the site's Explosion Protection Document for additional information.

6.6.3 Sprinkler System

Planned or emergency interruption of fire water systems require:

- Notify BASF Insurance Carrier, Alarm Company and South Adams County Fire Department of the impairment.
- Provide fire watch.
- Prohibit hot work operations in affected area with appropriate secondary fire protection

6.7 Spill or Release

6.7.1 Initial Notification and Containment

Personnel safety is the first priority throughout the spill or release mitigation and clean up. If a spill or release occurs immediately notify the shift supervisor and give the location and nature of the event. The shift supervisor is to determine the nature of the release. The release can be classified as follows:

- Incidental release that can be handled safety by the employees in the work area. This means the substance will be absorbed, neutralized, or otherwise controlled at the time of release by employees in the immediate work area without additional specialized training and without the aid of a coordinated response effort from employees outside the work area. (Spill < 10lbs)
- Incidental Release – Requires additional resources
- Emergency Response Incident - Requires an ERT response and full compliance with the HAZWOPER standard.

If the release is an Emergency Response Incident the shift supervisor is to do the following:

- Call out the ERT.
- Evacuate the area as necessary and take a head count to ensure that all personnel are accounted for.
- The BASF host is to escort their visitors to the evacuation area
- Block off the area as necessary.
- Follow the instructions of the Incident Commander.
- When dealing with known chemicals consult the SDS's.

6.7.1.1 Spills Inside the Building

In the event of a release inside the building, employees are to conduct the following actions:

- Department personnel are to contact the shift supervisor to inform them of the spill
- The Shift Supervisor is to determine the nature of the release.

6.7.1.2 Spills Outside the Building

If the spill occurs outside of the building immediately:

- notify the shift supervisor and give the location and nature of the event
- The shift supervisor is to determine the nature of the release.

6.7.1.3 Fumes or Gasses Inside of the Building.

If an evacuation is required, this will be declared as an ER incident. Personnel may not reenter the evacuated area until cleared by ERT.

6.7.2 ERT Spill and Release Response

6.7.2.1 Assessment

If the ERT is called the Incident Commander (IC) will be responsible for the control of the incident and will:

- With support from ERT, the IC is responsible for assessing the possible hazards, direct and indirect, to human health and the environment from the ongoing emergency.
- The assessment evaluation will include the specific nature of the incident, the type and volume of material involved, the time of day, weather conditions, and the location of the emergency.
- In addition, the assessment will take into consideration any toxic, irritating, or asphyxiating gases that are generated, or the effects of any other hazardous effects.
- If the assessment concludes there is a threat to human health or the environment the IC, in addition to coordinating emergency response activities, will further assess if an evacuation of the site is advisable and will notify the appropriate authorities.
- The South Adams County Fire Department Chief or other city official will assess the need for evacuation of the local area based on information provided. See Attachment E for neighboring businesses contact information.
- Use SDS information where possible.

6.7.2.2 Spill Response

Any spills of material will be handled accordingly:

- A check will be made to ascertain that the area is properly vented, as necessary.
- The area will be isolated with temporary barricades and signs to prevent entry of unauthorized personnel.
- The following protective equipment will be worn as appropriate for the event:
  a. Chemical Suit
  b. Chemical Boots
  c. Chemical Gloves
  d. Chemical goggles and/or face shield
  e. HEPA respirator (solid/ fines) or Organic Vapor cartridges (solvents) or SBCA (isocyanates)

- Spilled materials will be cleaned up and placed in a compatible storage and shipping container.
- Damaged drums and one cubic yard containers will be carefully unloaded into containers and/or over pack drums along with the cleaned-up spilled material.
- Damaged twenty cubic yard containers will be replaced with a container in good condition, and the contents of the damaged container will be unloaded with the use of a front end loader, brooms, and shovels, and placed in the replacement container. Containers will be clearly labeled.

Once a spill or release is reported, the size of the spill must be determined and as appropriate regulatory agencies and BASF notifications must be made. The incident must be further evaluated to determine response strategy by the Emergency coordinator on shift. Veolia Environmental Services is contracted to aid if warranted for larger spill responses.

To facilitate a quick and orderly evacuation, site radios will be utilized to make the notification. All emergency exits are labeled and illuminate when power is lost. All exits are properly maintained and employees practice a mock evacuation once per year. Emergency exit routes are posted throughout the facility. An evacuation is required employees will follow the predetermined routes and gather at the site assembly point, which is located on the northeast corner of the property, in the parking lot. Employees will be counted once they have left the production area and sign in sheets will also be reviewed.

It is imperative that employee safety and health is the first and foremost concern. Provisions must be made to ensure that an adequate supply of response equipment is available. Appropriate PPE must be worn by employees responding to a spill. The EC will determine the level of protection that is required. Cameras have been installed in the ISO Day Tank rooms and ISO Bulk rooms. These cameras can be used to determine the size of the release. A list of equipment required for each level is attached. Under no circumstances will an employee respond to a spill containing TDI unless it is less than 10lbs for solids or liquid spills. Only ERT personnel will be allowed to control spills greater than 10 lbs. Personnel responding to a spill of TDI are required to wear at a minimum a SCBA for initial entry. BASF requires the buddy system to be used at all times regardless the size of a spill. If your partner must leave the area, you must also leave.

6.7.2.3 Isocyanate Release

Worst Case Scenario

The worst-case scenario for the Brighton site has been defined as a catastrophic failure of a TDI tanker at the unload area. The distance to impact was calculated by using the DNV GL's Process Hazards Analysis Software Tool (PHAST) v7.2. The following information was used to complete the analysis

- A TDI tanker holds 45,000 lbs of TDI
- Maximum expected temperature of the TDI in the tanker during unloading is 100°F (38°C)
- The worst case scenario occurs when the tanker is at atmospheric pressure
- Site was defined as having a urban topography according to 40 CFR 68.22(e).
    - According to Appendix D of the EPA's *Risk Management Program Guidance for Offsite Consequence Analysis*, the corresponding roughness parameters for "rural" topography is 0.07 and "urban" topography is 0.17 (Section D.4.5 on page D-12)
- The toxic endpoint for TDI is listed as 0.007 mg/L (1 ppm) per RMP Guidance for Offsite Appendix B, Exhibit B-2 Consequence Analysis
- Requirements of 40 CFR 68.22 and 40 CFR 68.25 were included in the calculation

The results of the dispersion model show that in the event of this worst-case scenario's occurrence, a TDI concentration of 0.007 mg/L (1 ppm) can be expected at ~ 0.27 miles downwind.

Alternate Case

The alternate-case scenario for the Brighton site has been defined as a rupture at the 2in flexible connection at the bottom of the bulk TDI storage tank during unloading. The distance to impact was calculated by using the dispersion-modeling program DNV GL's Process Hazards Analysis Software Tool (PHAST) v7.2. The following information was used to complete the analysis

- The hole size is expected to be ~ $3.14in^2$
- The tank is assumed to be at max fill level (64000 lbs), so liquid is ~216" above the hole.
- Normal operating temperature of the TDI bulk storage is 90°F (32°C)
- The TDI bulk storage tank is at atmospheric pressure
- The release occurs indoors and the vapor generated from the release is assumed to be able to vent naturally from the isocyanate storage room.
- Site was defined as having an *urban* topography according to 40 CFR 68.22(e). According to the regulation, "Urban means that there are many obstacles in the immediate area; obstacles include buildings or trees."
    - According to Appendix D of the EPA's *Risk Management Program Guidance for Offsite Consequence Analysis*, the corresponding roughness parameters for "rural" topography is 0.07 and "urban" topography is 0.17 (Section D.4.5 on page D-12)
- The toxic endpoint for TDI is listed as 0.007 mg/L (1 ppm) per RMP Guidance for Offsite Appendix B, Exhibit B-2 Consequence Analysis
- Requirements of 40 CFR 68.22 and 40 CFR 68.25 were included in the calculation

The results of the dispersion model show that in the event of this alternate-case scenario's occurrence, a TDI concentration of 0.007 mg/L (1 ppm) can be expected at ~ 0.1 miles downwind.

See Appendix G for TDI ERPG endpoint radius.

6.7.2.4 Chemical Release Scenarios and Response

As required in Emergency Response Advisory #7, dated 9/26/14, the site has developed a list of worst case scenarios and responses. The spreadsheet of worst case and likely scenarios and the emergency pre-plans for worst case scenarios are in Attachment H.

6.7.2.5 Response Equipment

The available emergency response equipment for hazardous waste releases at the Brighton site is listed below: Appendix: M Spill Kit Inventory

Type	Location
PPE	PPE Storage Area
Respirator cartridges	PPE Storage Area
SCBA	Hallway behind Premix (TBA)
Sorbent pad and socks	PPE Storage Area,
85 gallon overpacks	Flammable storage room
Full face respirator	Individual Lockers
Decontamination solution	Label room by Iso-day tank rooms
Decontamination solution sprayer	Label room by iso day tank rooms
Decontamination solution sprayer	In Each spill cart
Spill response cart	Shipping dock
Spill response cart	First floor, west of tray dryers
Spill response cart	South bay, south of premix mezzanine
Spill response cart	Under Finish Mix mezzanine
Spill response cart	Flammable Storage Room

All of the emergency equipment onsite is inspected and repaired as necessary to assure proper operation in times of emergency. Emergency response equipment is inspected as listed below:

- Spill Kits – Inspected monthly
- Fire Extinguishers – Inspected monthly and under an annual maintenance contract
- Safety Showers – Inspected weekly and under an annual maintenance contract
- Fire water pumps – inspected weekly under an annual maintenance contract
- Sprinkler system – Under an annual inspection and maintenance review by outside contract group
- Site wide alarm – Inspected/tested monthly
- TDI alarms – Inspected/tested daily and calibrated annually by outside contract group
- SCBAs – Inspected Monthly

6.8 Post Emergency Procedures; Termination of Response Activities

Post-emergency procedures are designed to prevent recurrence, to clean up and dispose of residual materials, to decontaminate and resupply equipment, to provide for personnel debriefing, and to establish the need for revising the response plan.

6.8.1 Decontamination of Emergency Responders

Those performing decontamination can be no more than one PPE level below those being decontaminated. The decontamination is normally completed with the use of the sites safety showers. Ensure that personnel are decontaminated prior to being transported to outside medical support facilities.

After a spill incident the following procedures will be followed:

1. Boots, gloves, and chemical suits will be washed;
2. Coveralls, apron, and disposable respirator will be disposed in a waste disposal drum;
3. Eye protection equipment will be washed;
4. Respirator cartridges will be washed and new cartridges will be installed;
5. Showers will be taken by all affected personnel; and
6. Any injuries or irritations will be reported.

The drum(s) of contaminated material, along with any contaminated protective clothing used during cleanup, will be isolated in the hazardous waste area in the flammable room, properly characterized and sent for disposal. The equipment used will be washed with an appropriate detergent, and then triple rinsed with clean water. The rinse water will be contained and profiled for disposal.

6.8.2 Fire Watch

To prevent the recurrence of fires, a fire watch will be maintained for a period up to six hours after the fire is extinguished and the situation that caused the fire has been identified and corrected. The length of the watch is dependent on the severity of the fire.

6.8.3 Restart of Operations

The Incident Commander/Emergency Coordinator will ensure, prior to re-occupancy of the site and resumption of operations after an emergency, that all wastes are properly contained and that no condition exists that could cause a continuation or recurrence of the emergency. Corrective cleanup measures including waste residual identification and removal will be complete in the affected areas prior to initiation of operations that may be incompatible with the released material. Utilities and emergency equipment utilized during the emergency will be restored to their proper operating levels. The Site Management Team will notify the appropriate regulatory agencies and local response agencies that corrective actions have been completed and operations are being resumed.

6.8.4 Inspection and Post-Emergency Hazard Assessment

After an emergency, an inspection and post-emergency hazard assessment will be conducted. This inspection will define any problem areas such as damaged or ruptured containers, impaired utilities or equipment or anything else necessary that will limit the site's return to operational status.

If the incident has caused a breach of security, (i.e., a part of the fence around the hazardous waste storage unit is down), additional security measure will be instituded as outlined by the site manager. This may consist of site monitoring by Adams County Police or the placement of temporary fencing and warning signs to stop unauthorized personnel. Any such measures will remain in effect until all necessary repairs and waste removal are complete.

6.8.5 Post-Emergency Equipment Maintenance and Cleanup of Residues

The alarm system will be restored to its ready state, fire extinguishers replaced, and spill supplies and equipment checked and resupplied, as necessary, after an emergency.
The drum(s) of contaminated material, along with any contaminated protective clothing used during cleanup, will be isolated in the hazardous waste storage unit, properly characterized and sent for disposal. The equipment used will be washed with an appropriate detergent, and then triple rinsed with clean water.

Depending on the scale of the emergency, samples may be taken from surface waters and from any soil that may have been exposed to the release. A sufficient number of samples will be taken to determine the extent of contamination. Any contaminated materials will be removed and placed in drums for disposal at an approved disposal facility.

6.8.6 Personnel Debriefing and Retraining

The site incident commander will review preparedness and prevention activities, response activities, and evacuation procedures with all personnel who were involved in responding to an emergency. Based on this review, a determination will be made regarding the effectiveness of the response plan. Should any failure of plan aspects be identified, the plan will be amended and all appropriate notifications made. Any suggestions for revisions to the contingency plan, if appropriate, will be implemented. If revisions to the training or inspection plans are required because of a change in the contingency plan, these plans will also be revised accordingly.

6.8.7 Post Response Critique

Ensure that a critique of the response is completed and documented, using the ERT Response Assessment form. The form is in Attachment E.

6.9 HAZWOPER Compliance Summary

This section provides a general procedure and written plan for personnel engaged in responding to on-site releases of hazardous substances in accordance with OSHA 1910.120 Subpart q, Hazardous Waste Operation and Emergency Response. This section does not apply to incidental spill on-site clean-up activities of hazardous materials by operations personnel.

6.9.1 Organization Responsibility and Personnel Roles

A special Incident Command System has been established to provide effective organization, command, communications, and liaison functions during major emergencies.

Operations unit personnel who initially detect or investigate a known or suspected hazardous material release incident within their own unit, are considered "first responder awareness level" personnel. All members of the ERT are considered Hazardous Material Specialist/Technicians.

6.9.2 Emergency Recognition and Prevention

BASF is committed to prevention of releases and exposures as the first and most effective method for handling hazardous chemicals. Facilities are designed and built to minimize frequency and magnitude of hazardous releases. An appropriate combination of engineering controls, work practices, personal protective equipment, and training, is used to minimize employee exposures. BASF uses MSDSs as guides in determining appropriate levels of protective equipment and exposure for those hazardous substances and health hazards.

BASF employees are trained to detect the presence and potential hazards of chemicals on the site with which they might reasonably come in contact. This is accomplished through an effective Hazard Communication Program. New employees and contractors are included in this program.

6.9.3 Alert and Response

There is an evacuation/fire alarm system that can be manually activated by pull stations located throughout the site.

6.9.4 General Security and Access Control

Security and access control to the incident area is controlled by either the designated person stationed at the gate or the "do not enter" tape once the employees are let back in the building.

All non-essential personnel and any other personnel without proper protective equipment will stay out of the incident area until spill clean-up is complete.

6.9.5. Evacuation

Section 8.0 of this procedure addresses evacuations.

6.9.6 Safe Distance and Refuge

For major releases, severity assessment will be made by the Incident Commander. This will determine the if there is a need to move the evacuation point further away and if there will be a need to shelter in place.

6.9.7 Personal Protective Equipment

Personal protective equipment (PPE) is selected to protect responders from harmful exposures. Specific respiratory protection and PPE requirements are established in Brighton Procedure BRI_SOP_EHS_005.

6.9.8 Medical

Emergency treatment, transportation, and recordkeeping requirements that will be done for those who have responded to an emergency come under the scope of OSHA 1910.120. Section 6.3 of this procedure covers the sites response to a medical event.

6.9.9 Decontamination

Most of the equipment used is disposable and requires no decontamination. For equipment which is not disposable, prescribed decontamination procedures will be used. For HAZMAT incidents, the on-scene IC is responsible to ensure proper decontamination measures are established. See Section 6.8.1 of this procedure for site specific requirements.

6.9.10 Pre-Emergency Planning and Coordination with Outside Agencies

BASF maintains an inter-active relationship and coordination with outside agencies including the Adams County Police Departments, the Adam's County Emergency Response Team, and other related organizations. For any incident considered as a "Community Emergency", the site works in close association with local authorities. See Section 3.0 of this procedure for site specific activities.

6.9.11 Critique

Upon termination of an emergency drill or field exercise, an incident debriefing and critique must be conducted. In many cases both the debrief and critique are conducted immediately after termination of the exercise, however, in the event of a large scale drill or exercise involving many people, several units and/or multiple responding agencies, the debrief will be conducted immediately after the exercise and the critique will be performed at a later date.

Debriefings should include the following where applicable:

- Possible signs and symptoms of exposures to chemicals present during the incident
- Identification of damaged equipment, or unsafe conditions needing immediate attention or evaluation
- Information gathered for post-incident analysis and critique
- A summary of activities performed by each branch of the emergency command system

The purpose of a critique is to not only reinforcing the positive aspects of the response, but to also identify problems encountered during the exercise as well as solutions available to correct them.

Where applicable critiques should include, at a minimum, the following:

- A summary of activities performed by each branch of the emergency command system (from the debrief)
- Identification of positive aspects of the exercise
- Identification of equipment that did not perform adequately during the exercise
- Identification of procedures that require updating based on information obtained during the exercise
- Corrective actions including completion dates and responsible person

This plan may be amended at any time. It will be amended whenever there is a change in design, construction, operation or maintenance that has a significant effect on the potential for discharge of pollutants, or if the plan proves to be ineffective in eliminating or minimizing pollutants from identified sources or otherwise achieving its objectives.

7.0 ROLE OF SITE MANAGEMENT TEAM

This plan covers multiple events, some of which may occur at the same time. It is the responsibility of the Site Management and the Incident Commander (IC) to effectively manage our response to events that may occur. Employees and response personnel will not place themselves in danger at any time while conducting an incidental response activity. The IC will maintain full control of the response until an alternate, who is qualified, arrives to assume the role relieves them. This may be an individual from an outside agency or firm. Each employee listed within the plan must have a thorough knowledge of this plan and their responsibilities during an event. The IC will arrange for additional assistance if site personnel or resources are exceeded or if the site cannot effectively manage the incident.

In the event of an emergency the site management team's responsibilities are:

- Provide support to the incident commander and the ERT.
- If the media could be involved prepare response per Appendix F
- Ensure that medical attention is being provided to any injured personnel
- Ensure that witnesses are interviewed as soon as possible.

- Consider videotaping the scene.
- If mobilization of the public sector (police, fire) has occurred or any other criteria of a BASF "Major Incident" (see procedure 1605 for definition), contact the BASF Emergency Response Hotline at 800-832-4357 and the site EHS Hub Contact.
- Ensure internal reporting through the AIM system is completed.
- Interact with the media as outlined in Appendix F.

8.0 EVACUATION / SHELTER IN PLACE

8.1 Emergency Evacuation Plan

All employees must be familiar with the building's emergency evacuation routes and know the location of the exit closest to where they are working.

In a situation in which the building should be evacuated, i.e. fires, notice will be given by emergency siren. Manual pull alarm boxes are found at all doors in the facility. As an alternative to pulling an alarm, plant radios are also utilized to inform site personnel of emergencies.

Under most conditions, personnel are to evacuate the building to the designated rendezvous point. However, if spill conditions warrant, it is possible that personnel will need to shelter in place in the break room area of the building. Incident command will need to make this determination.

Upon hearing the emergency siren to evacuate, those employees not in charge of critical plant operations and operating machinery should shut down their equipment and leave the area in a quiet and orderly manner, using the safest route to the nearest exit.

The isocyanate systems are automatically shut down once the alarm system is activated.

Employees should not stop to gather personal belongings or change clothes. Contractors or visitors should be escorted to the proper exit if necessary. All employees, contractors, and visitors must quickly gather in the appropriate location and report for roll call.

The administrative Coordinator or EHS Specialist if on site, (HR Manager as alternates) will get the site roster and visitor sign in sheets upon exiting the building during M-F Day Shifts. Weekend and Night shift supervisor/leads will be responsible for gathering all the above listed information. SDS will be made available to emergency response teams to aid in safe response to firefighting, spill or rescue operations. Site roster will be used for taking roll call to determining if anyone is remaining in the building.

8.2 Evacuation Routes

Exits are located in several locations around the building. Employees working in the front office may exit out doors in the north or east walls. Employees working in the QC labs may exit out the west door in the lab. Employees working in the northern third of the building can exit through the northwest door in the maintenance area or the northeast door next to the roll door. Employees working in the shipping department in the central eastern two-thirds of the building may exit out the doors to the east. Those working in the south-central and southeastern storage areas may exit out doors in the south-central or east wall. Those working in the HLM/premix area can exit out doors to the south or exit through the escape corridor to the north and west. Employees in the reactor room in the far northwest corner can exit to the north. Employees in the finishing mixer area can exit through the escape corridor or to doors to the west. Employees working in the packaging area can also exit to the west.

Exit doors should never be locked or blocked at any time.

8.4 Accounting for Employees

After exiting the facility or sheltering in place, all employees are to assemble for roll call. The primary assembly point will be in the northeast parking lot at the main entrance to the south of the blue line. In the event that emergency conditions prevent use of the primary assembly point, alternate assembly will take place in SE corner of property near Fulton Street. A head count will be made to ensure that no one is left in the building. The following employees are responsible for taking a roll call:

- Day Shift: Gina Kinnamon, Chastity Jefferson
- A Shift: Nick Sena
- B Shift: Solomon Quaye
- C Shift: Sean Johnson
- D Shift: Mario Garcia

8.5 ALARM SYSTEM

A summary of the Plant alarm system is below:

TDI Alarm:
Description Intermittent whaling
Light: Red strobe light
Set point: 5 ppb or greater or monitor faulted
Action: Evacuate the immediate area

Fire Alarm:
Description: Whoooop…Whooooop….Whoooop
Action: Everyone evacuate to rally point

9.0 PLAN REVIEW AND UPDATE

The EHS Specialist will update this plan when information changes. The Site Manager and EHS Specialist must approve any changes.

The Corporate EHS Audit function will review this plan during the periodic site Ecology & Safety Audit process.

10.0 BASF ALERTS AND ADVISORIES CROSS REFERENCE

Emergency Response Alert/ Advisory	Requirement	Contingency Plan Section
1	Revised On and Off-Site Emergency Response Training	3.1, 3.2, 3.3
2	Guidance Document Annual Emergency Drill Program	3.5
3	Updated OSHA HAZWOPPER Standard Compliance Directive	3.0, 3.1, 3.2, 3.5, 3.5.1, 8.0, 8.5
4	Updated OSHA HAZWOPPER Compliance Directive – Safe Places of Refuge Guidance	8.0, 8.1, 8.2, 8.3
5	BASF Global Directive – Requirements for Emergency Response Training, Awareness and Competency	3.1, 3.2, 3.3, 3.5
6	BASF Global Directive – Emergency Response Planning Requirement	6.7.2
6	OSHA Standard 1910.165	8.0, 9.0
6	BC032.010 – Incident Notification and Reporting	4.0, 5.0, 6.7.1, 7.0
7	Worst Case and Most Likely ER Scenarios	6.7.2.6
7	Response Pre Plans	Site RMP
7	Roles of Local Responders and Contractors	3.4, 3.5
7	Local Responder Review of ER Scenarios	3.4
7	Training and Responder Availability	3.1, 3.5, 6.7.2.2
7	Media Trained Employees	7.0
7	Drill Scenarios	3.4, 3.5, 3.6
8	Fire Risk Assessment, Fire Prevention Concept, Fire Water Assessment	6.1.1, Fire Water Risk Assessment

11.0 RCRA CONTINGENCY PLAN REGULATORY CROSS-REFERENCE

Rule	Description of Rule	Contingency Plan Section
§264.50	Applicability. The regulations in this subpart apply to owners and operators of all hazardous waste facilities.	1.0
§264.51	Purpose and implementation of contingency plan	1.0
§264.51(a)	Each owner or operator must have a contingency plan for facility. The contingency plan must be designed to minimize hazards to human health or the environment from fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water.	1.0
§264.51(b)	The provisions of the plan must be carried out immediately whenever there is a fire, explosion, or release of hazardous waste or hazardous waste constituents which threaten human health or the environment.	1.0
§264.52	Content of contingency plan	Table of Contents
§264.52(a)	The contingency plan must describe the actions facility personnel must take to comply with §§264.51 and 264.56 in response to fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water at the facility.	6.7.2, 6.7.2.1, 6.7.2.2, 6.7.2.3, 6.7.2.5, 6.8, 6.8.1
§264.52(b)	If the owner or operator has already prepared a Spill Prevention, Control, and Countermeasures (SPCC) Plan in accordance with part 1123 of this chapter, or some other emergency or contingency plan, he need	Not Applicable

Rule	Description of Rule	Contingency Plan Section
	only amend that plan to incorporate hazardous waste management provisions that are sufficient to comply with the requirements of this part. The owner or operator may develop one contingency plan which meets all regulatory requirements. EPA recommends that the plan be based on the National Response Team's Integrated Contingency Plan Guidance ("One Plan"). When modifications are made to non-RCRA provisions in an integrated contingency plan, the changes do not trigger the need for a RCRA permit modification.	
§264.52(c)	The plan must describe arrangements agree to by local police departments, fire departments, hospitals, contractors, and State and local emergency response teams to coordinate emergency services, pursuant to §264.37	3.4
§264.52(d)	The plan must list names, addresses, and phone numbers (office and home) of all persons qualified to act as emergency coordinator (see §264.55), and this list must be kept up to date. Where more than one person is listed, one must be named as primary emergency coordinator and others must be listed in the order in which they will assume responsibility as alternates. *For new facilities,* this information must be supplied to the Regional Administrator at the time of certification, rather than at the time of permit application.	3.1,3.2, 3.3, 3.4, Attachment F
§264.52(e)	The plan must include a list of emergency equipment at the facility (such as fire extinguishing systems, spill control equipment, communications and alarm systems (internal and external), and decontamination equipment), where this equipment is required. This list must be kept up to date. In addition, the plan must include the location and a physical description of each item on the list, and a brief outline of its capabilities.	6.2.5
§264.52(f)	The plan must include an evacuation plan for facility personnel where there is a possibility that evacuation could be necessary. This plan must describe signal(s) to be used to begin evacuation, blocked by releases of hazardous waste or fires.	8.0, 8.1, 8.2, 8.3, 8.4
§264.53	Copies of contingency plan. A copy of the contingency plan and all revisions to the plan must be:	1.0, 11.0

Rule	Description of Rule	Contingency Plan Section
§264.53(a)	Maintained at the facility; and	1.0
§264.53(b)	Submitted to all local police departments, fire departments, hospitals, and State and local emergency response teams that may be called upon to provide emergency services.	3.4
§264.54	Amendment of contingency plan. The contingency plan must be reviewed, and immediately amended, if necessary, whenever:	9.0
§264.54(a)	The facility permit is revised;	9.0
§264.54(b)	The plan fails in an emergency;	9.0
§264.54(c)	The facility changes-in its design, construction, operation, maintenance, or other circumstances-in a way that materially increases the potential for fires, explosions, or releases of hazardous waste or hazardous waste constituents, or changes the response necessary in an emergency;	9.0
§264.54(d)	The list of emergency coordinators changes; or	9.0
§264.54(e)	The list of emergency equipment changes.	9.0
§264.55	Emergency coordinator. At all times, there must be at least one employee either on the facility premises or on call (i.e., available to respond to an emergency by reaching the facility within a short period of time) with the responsibility for coordinating all emergency response measures. This emergency coordinator must be thoroughly familiar with all aspects of the facility's contingency plan, all operations and activities at the facility, the location and characteristics of waste handled, the location of all records within the facility, and the facility layout. In addition, this person must have the authority to commit the resources needed to carry out the contingency plan.	3.2, 3.3
§264.56	Emergency procedures	5.0, 6.0
§264.56(a)	Whenever there is an imminent or actual emergency situation, the emergency coordinator (or his designee when the emergency coordinator is on call) must immediately:	5.0, 6.0
§264.56(a)(1)	Activate internal facility alarms or communication systems, where applicable, to notify all facility personnel; and	6.0
§264.56(a)(2)	Notify appropriate State or local agencies with designated response roles if their help is needed.	5.0
§264.56(b)	Whenever there is a release, fire, or explosion, the emergency coordinator must immediately identify the	3.3, 6.7.2.1

Rule	Description of Rule	Contingency Plan Section
	character, exact source, amount, and extent of any released materials. He may do this by observation or review of facility records or manifests, and, if necessary, by chemical analysis.	
§264.56(c)	Concurrently, the emergency coordinator must assess possible hazards to human health or the environment that may result from the release, fire, or explosion. The assessment must consider both direct and indirect effects of the release, fire, or explosion (e.g., the effects of any toxic, irritating, or asphyxiating gases that are generated, or the effects of any hazardous surface water run-off from water or chemical agents used to control fire and heat-induced explosions).	3.3, 5.2, 5.3, 6.7.2.1
§264.56(d)	If the emergency coordinator determines that the facility has had a release, fire, or explosion which could threaten human health, or the environment, outside the facility, he must report his findings as follows:	6.7.2.1
§264.56(d)(1)	If his assessment indicates that evacuation of local areas may be advisable, he must immediately notify appropriate local authorities. He must be available to help appropriate officials decide whether local areas should be evacuated; and	5.0
§264.56(d)(2)	He must immediately notify either the government official designated as the on-scene coordinator for that geographical area, or the National Response Center (using their 24-hour toll free number 800/424-8802). The report must include:	5.0
§264.56(d)(2)(i)	Name and telephone number of reporter;	5.3.2, 5.3.3
§264.56(d)(2)(ii)	Name and address of facility;	5.3.2, 5.3.3
§264.56(d)(2)(iii)	Time and type of incident (e.g., release, fire)	5.3.2, 5.3.3
§264.56(d)(2)(iv)	Name and quantity of material(s) involved, to the extent known;	5.3.2, 5.3.3
§264.56(d)(2)(v)	The extent of injuries, if any; and	5.3.2, 5.3.3
§264.56(d)(2)(vi)	The possible hazards to human health, or the environment, outside the facility.	5.3.2, 5.3.3
§264.56(e)	During an emergency, the emergency coordinator must take all reasonable measures necessary to ensure that fires, explosions, and releases do not occur, recur, or spread to other hazardous waste at the facility. These measures must include, where applicable, stopping processes and operations,	3.3

Rule	Description of Rule	Contingency Plan Section
	collecting and containing release waste, and removing or isolating containers.	
§264.56(f)	If the facility stops operations in response to a fire, explosion, or release, the emergency coordinator must monitor for leaks, pressure buildup, gas generation, or ruptures in valves, pipes, or other equipment, wherever this is appropriate.	3.3
§264.56(g)	Immediately after an emergency, the emergency coordinator must provide for treating, storing, or disposing of recovered waste, contaminated soil or surface water, or any other material that results from a release, fire, or explosion at the facility.	6.8, 6.8.5
§264.56(h)	The emergency coordinator must ensure that, in the affected area(s) of the facility:	6.8, 6.8.5
§264.56(h)(1)	No waste that may be incompatible with the released material is treated, stored, or disposed of until cleanup procedures are completed; and	6.8.5
§264.56(h)(2)	All emergency equipment listed in the contingency plan is cleaned and fit for its intended use before operations are resumed.	6.8.5
§264.56(h)(2)(i)	The owner or operator must note in the operating record the time, date, and details of any incident that requires implementing the contingency plan. Within 15 days after the incident, he must submit a written report on the incident to the Regional Administrator. The report must include:	5.3.4
§264.56(h)(2)(i)(1)	Name, address, and telephone number of the owner or operator;	5.3.4
§264.56(h)(2)(i)(2)	Name, address, and telephone number of the facility;	5.3.4
§264.56(h)(2)(i)(3)	Date, time, and type of incident (e.g., fire, explosion);	5.3.4
§264.56(h)(2)(i)(4)	Name and quantity of material(s) involved;	5.3.4
§264.56(h)(2)(i)(5)	The extent of injuries, if any;	5.3.4
§264.56(h)(2)(i)(6)	An assessment of actual or potential hazards to human health or the environment, where this is applicable; and	5.3.4
§264.56(h)(2)(i)(7)	Estimated quantity and disposition of recovered material that resulted from the incident.	5.3.4

12 REVISION HISTORY

Revision:	Change	Change Made:	Date
1	N/A	Initial Issue of Document, reformat to convert to integrated emergency response plan	7/20/17
2		Addition of 6.6.2 V-65B cold Room management during power outage: BHA action item	12/11/17
3	RC action item	Addition of attachment A-D, roles and responsibilities, organizational chart	03/08/2018

ATTACHMENT A - ON-SITE RESPONSE MANAGEMENT STRUCTURE

SITE MANAGER / EMERGENCY COORDINATOR
Name: **William Hack** Phone #: **303-227-7070**
Address: [redacted]

DESIGNATED PERSONNEL
Name: **Production Manager** Phone #: **TBD**
Address: _____

DESIGNATED PERSONNEL
Name: **Gilbert Perez** Phone #: **303-227-7061**
Address: [redacted]

DESIGNATED PERSONNEL
Name: **Chastity Jefferson** Phone #: **720-466-6981**

Address: [redacted]

- In case of a critical event, contact the **Site Manager** or **Designated Personnel** (in the order listed above).
- If the **Site Manager** is not present at the site, **Designated Personnel** should assume on-site coordination responsibility until the Emergency Coordinator arrives. Shift supervisors will serve as Emergency Coordinators on shift.

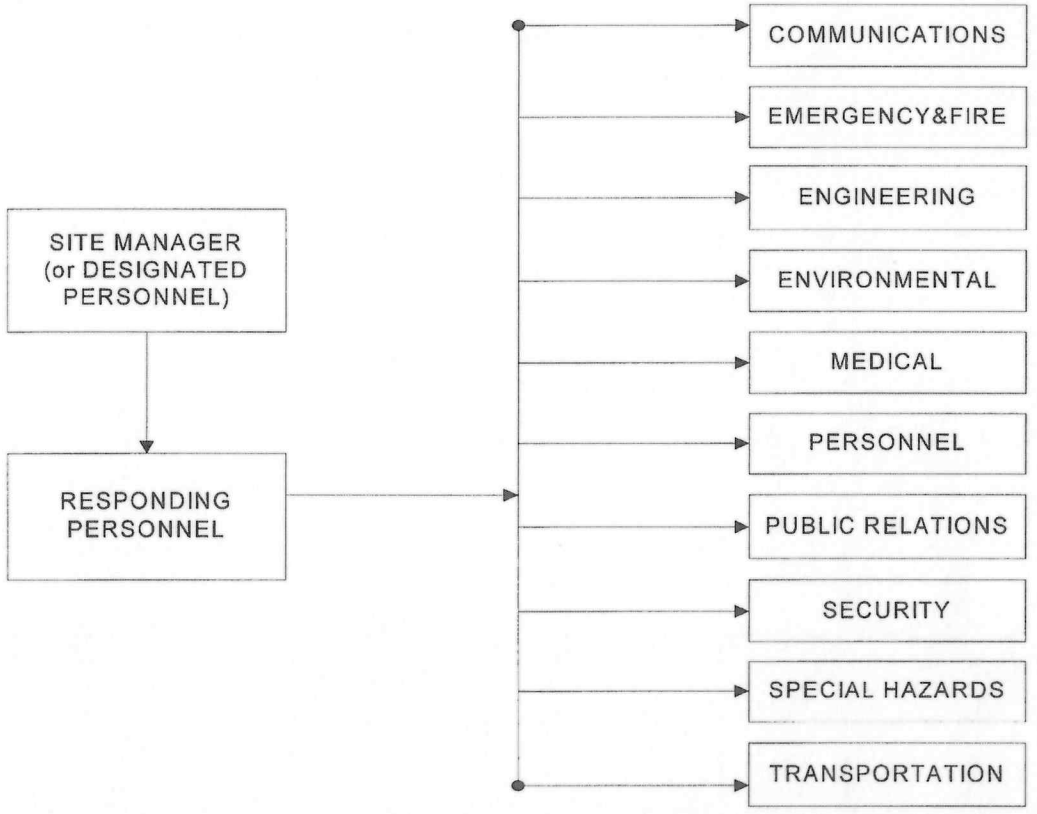
ATTACHMENT B - RESPONSE AGENCIES

1. AGENCY/DEPARTMENT	CONTACT	TELEPHONE NUMBER
2. FIRE DEPARTMENT	**South Adams County**	**911**
POLICE DEPARTMENT	**Adams County Sheriff's Department**	**911**
EMERGENCY MEDICAL SERVICES	**Platte Valley Medical Center**	**303-450-4482**
HOSPITAL	**Platte Valley Medical Center**	**303-450-4482**
OCCUPATIONAL CLINIC	**Peak Occupational Clinic**	**303-655-9005**
ADAMS COUNTY OFFICE OF EMERGENVY MANAGEMENT	**Dispatch**	**720-523-6602**

When contacting the emergency response groups during a critical event, be sure to give them the following information:

- **Name and call-back number of person reporting**
- **Location of incident**
- **General description of what has occurred**
- **Exact name, quantity, and hazard class of the chemicals involved, if known**
- **Extent of injuries**
- **Potential danger to the environment and neighboring population**

ATTACHMENT C – TYPICAL EMERGENCY RESPONSE ORGANIZATIONAL STRUCTURE



ATTACHMENT D - TYPICAL RESPONSE FUNCTIONS

MEDICAL

- Obtains medical care for injured persons
- Coordinates with transportation
- Coordinates personnel to handle medical emergencies

PUBLIC RELATIONS

- Releases public information about the emergency
- Serves as a spokesperson for interviews
- Establishes an emergency media or press headquarters

COMMUNICATIONS

- Establishes a plant warning system
- Establishes and maintains an emergency communication system

SECURITY

- Establishes site access controls
- Controls vehicle and pedestrian traffic
- Assures protection of vital records
- Assists in evacuation procedures

FIRE AND EMERGENCY

- Arranges for the maintenance of fire equipment
- Coordinates rescue and fire fighting efforts with local fire department
- Develops lists for personal protective equipment

SPECIAL HAZARDS

- Manages activities related to special chemical hazards
- Manages decontamination measures
- Manages pre-emergency plans for dealing with special hazards
- Manages efforts to control hazardous spills
- Manages efforts to contain contaminated runoff from fire fighting operations
- Manages activities to control atmospheric releases
- Conducts tests/research to determine severity of hazard
- Reports to appropriate government agencies on the degree of risk to the general public posed by the incident
- Manages pre-planning activities related to the containment and cleanup of spills and disposal

ENGINEERING

- Arranges for on-the-scene emergency lighting
- Manages emergency shut down procedures

TRANSPORTATION

- Coordinates and controls all transportation needs
- Develops pre-emergency plans for vehicles needed, including heavy equipment

PERSONNEL

- Coordinates procedures to account for all personnel, including personnel at the emergency scene
- Communicate with the families of the injured or deceased employees
- Maintains up to date records of employee names, addresses, and telephone numbers

Attachment E: Neighboring Business Contact List

Business	Contact	address		Emergency Contact phone #
2nd Steel/Wagner Equipment	Steve Kiley, Manager and Clyde Refven	10707 Fulton St	Brighton, CO 80601	**Steve 720-289-8709 Clyde 303-324-2162**
TMS Truck Service	Dave Woolverton	10151 E 107th Pl	Brighton, CO 80601	
EJ Fiberglass	Diane and Kirk Ellis	10201 E 107th Pl	Brighton, CO 80601	
Applied Ingenuity	Scott Martin, President	10301 E 107th Pl	Brighton, CO 80601	
Kluge Bros. Flooring	Pat and John Kluge	10361 E 107th Pl	Brighton, CO 80601	
LMS Drilling	Greg Schriner, Owner	10420 E 107th Pl	Brighton, CO 80601	
Redd Iron	David Atkins, May and Jared Schlener	10421 E 106th Ave	Brighton, CO 80601	
Eastside Heating and Air Conditioning	Boe Campbell, Owner	10481 E 106th Ave	Brighton, CO 80601	
Kuchar Electric Co	Douglas Montgomery	10360 E 106th Ave	Brighton, CO 80601	
Advanced Underground	Harvey Houston, VP	16250 Del Ray Ct	Brighton, CO 80603	
Rocky Mtn Truck Service	Krista Deese, Account Executive - Sean McNerney	10371 E 106th Ave	Brighton, CO 80601	303-227-9126
American Fabricators	Ed Osborn	10290 E 106th Ave	Brighton, CO 80601	
Drexel Supply Co	David Cobbs	10361 E 106th Ave	Brighton, CO 80601	
CraneWorks		10200 E 106th Ave	Brighton, CO 80601	
Precision Industrial Contractors	Rick Goodmay, Gen Sales Mgr	10275 E 106th Ave	Brighton, CO 80601	
AmWest Control Inc	Eileen Suazo	10175 E 106th Ave	Brighton, CO 80601	
Allstate Sweeping	Barb Hollis and Beth Kruger	10150 E 106th Ave	Brighton, CO 80601	
Commerce City Assistant City Mgr	Roger Tinklenberg	7887 E 60th Ave	Commerce City CO 80022	
Commerce City Sr. Economic Development Specialist	Alexis Bozzo	7887 E 60th Ave	Commerce City CO 80022	
South Adams County Fire Department	Lee Whitner	6050 Syracuse St	Commerce City CO 80022	
Belle Creek Charter School	Irene German, Principal	9290 E 107th Ave	Henderson CO 80640	
Adams County Sheriff's Office	Michael McIntosh, Sheriff	332 N 19th Ave	Brighton CO 80601	
Ziggi's Coffee Shop	Brandon Knudsen, Owner	10401 Belle Creek Blvd Unit 100	Henderson CO 80640	
Sashco	Les Burch and Jonathan Jackson, Dir of Manufacturing	10300 E 107th Pl	Brighton CO 80601	**Fredrick Williams 720-799-5894**

ATTACHMENT F: Emergency Response Team Roster

Hazwoper Teams

Addresses have been blacked out to due confidently; See Management for full disclosure

A-Shift	Phone Numbers	Responder	I.C
Nick Sena	720-270-7065	X	X
Enstein Carlos	720-254-7590	X	
Steven Graham	303-253-2544	X	
C-Shift	**Phone Numbers**	Responder	I.C
Steven Valenta	720-670-6819	X	X
Maintenance	**Phone Numbers**	Responder	I.C
Marc Montplaisir	303-775-3613	X	
Tim Crockett	720-466-9337	X	
Chris Koenig	720-273-1855	X	
Quality	**Phone Numbers**	Responder	I.C
Hashley Lieb	720-676-9032	X	
B-Shift	**Phone Numbers**	Responder	I.C
Brandon Fabrizio	720-366-7641	X	
Luis Gasca	720-940-8332	X	
D-Shift	**Phone Numbers**		
Mario Garcia	720-372-9194	X	X
Todd Rutland	303-587-3499	X	X
Aaron Bannon	720-280-0520	X	
Logistics	**Phone Numbers**		
Pigments	**Phone Numbers**		
Jeff Johnson	303-827-5002	X	X
Alternate Incident Commander			
Gilbert Perez	303-908-7985	X	X
Update: 9/12/2018 CJ			

ATTACHMENT G

BASF Guidelines for Isocyanate Exposure

Isocyanates A 1

Information and recommendations for first responders

- **These guidelines are based on information about the diisocyanates toluene diisocyanate (TDI), diphenylmethane diisocyanate (MDI), and hexamethylene diisocyanate (HDI). Recommendations for other isocyanates might be similar. However, these guidelines do not cover special features potentially related to other isocyanates.**
- **Before approaching the patient the first responder must make sure that he does not risk exposing himself to diisocyanates.**
- **Patients exposed only to diisocyanate vapor do not pose a significant risk of secondary contamination. Patients whose clothing or skin is contaminated with liquid diisocyanates or solvents containing diisocyanates can secondarily contaminate rescue and medical personnel by direct contact or through evaporation of diisocyanates.**
- **Diisocyanates are severely irritating to all tissues, in particular to the respiratory tract. Exposure may result in eye and skin irritation, coughing, chest pain, dyspnea. Swelling of the throat and signs of accumulation of fluid in the lungs (shortness of breath, cyanosis, expectoration, cough) may occur.**
- **Asthmatic attacks (constriction of the bronchi with severe dyspnea) may occur after exposure to very low diisocyanate concentrations.**
- **There is no antidote to be administered to counteract the effects of diisocyanates. Treatment consists of supportive measures.**

1. Substance information

Diisocyanates: TDI - $CH_3C_6H_3[NCO]_2$, CAS 26471-62-5 (mixture), CAS 584-84-9 (2,4-isomer), CAS 91-08-7 (2,6-isomer);
MDI - $CH_2(C_6H_4[NCO])_2$, CAS 144490-96-0 (mixture), CAS 5873-54-1 (2,4'-isomer), CAS 101-68-8 (4,4'-isomer);
HDI - $C_6H_{12}(NCO)_2$, CAS 822-06-0
Synonyms: TDI, diisocyanatotoluene, tolylene diisocyanate;
MDI, methylenediphenyl diisocyanate, methylene bis(phenylisocyanate);
HDI, hexamethylene diisocyanate, diisocyanatohexane
At room temperature, TDI and HDI are colorless to straw-colored liquids while MDI monomer is a colorless solid. Diisocyanates have a fruity, pungent odor. Diisocyanates are highly reactive even to hydroxyl and amino groups in human body cells. When heated to decomposition, they emit toxic fumes of nitrogen oxides.
The major application of diisocyanates is the manufacture of polyurethane foams, various plastic materials, and elastomers. In addition, diisocyanates are used as hardeners for paints, coatings, and adhesives.

2. Routes of exposure

Inhalation

Inhalation is the major route of diisocyanate exposure. The odor does not provide adequate warning of hazardous diisocyanate concentrations. Irritation of the respiratory tract and asthmatic attacks (constriction of the bronchi with severe dyspnea) can occur even at very low concentrations.

Skin/eye contact

Direct contact with diisocyanate liquids and vapor can cause severe irritation to skin or eyes.

Ingestion

Involuntary ingestion of diisocyanates is unlikely but could cause chemical burns of the mouth, throat, esophagus, and stomach.

Reviewed: 2006
Code: E012-002

3. Acute health effects

Diisocyanate exposure causes irritation of all tissues. However, often throat and lung irritation are predominant and may lead to chest tightness, coughing, shortness of breath, blood-streaked sputum. Inflammation and severe damage of the lungs can occur. Asthmatic attacks (constriction of the bronchi with severe dyspnea) may occur after exposure to very low diisocyanate concentrations.
CNS effects and muscle pain can occur after inhalation exposure.
Skin contact with diisocyanates can cause irritation and redness with blister formation.
Eye contact may result in severe irritation with immediate pain, lacrimation, swelling of the lids, and clouding of the eye surface.

4. Actions

Rescuer self-protection

If the zone which has to be entered by the rescuer is suspected of containing diisocyanates, pressure-demand, self-contained breathing apparatus and chemical-protective clothing shall be worn; do not use equipment that is contaminated itself.
Patients exposed only to diisocyanate vapor do not pose a significant risk of secondary contamination. Patients whose clothing or skin is contaminated with liquid diisocyanates or solvents containing diisocyanates can secondarily contaminate other people by direct contact or through evaporation of diisocyanates.

Patient recovery

Patients should be removed from the contaminated zone immediately. If patients can walk, they should walk. Patients who are unable to walk may be removed on backboards or stretchers; if these are not available, carefully carry or drag patients to safety.
Immediate priorities must follow the "A, B, C's" of resuscitation:
Airway (make sure the airway is not blocked by the tongue or by a foreign body)
Breathing (check to see if the patient is breathing, provide ventilations with use of appropriate barrier devices, e.g. with a pocket face mask, if breathing is absent)
Circulation (check for a pulse, initiate cardiopulmonary resuscitation if pulse is absent)

Decontamination

Patients exposed only to diisocyanate vapor who have no evidence of skin or eye irritation do not need decontamination. All others require decontamination.
Patients who are able and cooperative may assist with their own decontamination. If the exposure involved liquid diisocyanates or solvents containing diisocyanates and if clothing is contaminated, remove and double-bag the clothing.
Flush exposed skin and hair with plain water for at least 15 minutes. Protect eyes during flushing of skin and hair. Continue other basic care during flushing.
Irrigate exposed or irritated eyes with plain water or saline for at least 15 minutes. Remove contact lenses if present and easily removable without additional trauma to the eye. Continue other basic care during flushing.

Further actions

Each potentially exposed person should seek immediate medical advice and treatment.

In this document BASF has made a diligent effort to ensure the accuracy and currency of the information presented but makes no claim that the document comprehensively addresses all possible situations related to this topic. This document is intended as an additional resource for first responders in assessing the condition and managing the treatment of patients exposed to diisocyanates. It is not, however, a substitute for the judgement of a first responder and must be interpreted in the light of specific information regarding the patient available to such a first responder and in conjunction with other sources of authority.

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Occupational Medical and Health
Protection Department, GOA
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67056 Ludwigshafen
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BASF Corporation
Medical Department
333 Mt. Hope Avenue
07866 Rockaway, NJ
USA

Reviewed: 2006

Isocyanates B 1

Information and recommendations for paramedics and doctors at the site

- **These guidelines are based on information about the diisocyanates toluene diisocyanate (TDI), diphenylmethane diisocyanate (MDI), and hexamethylene diisocyanate (HDI). Recommendations for other isocyanates might be similar. However, these guidelines do not cover special features potentially related to other isocyanates.**
- **Before approaching the patient the paramedics and doctors at the site must make sure that they do not risk exposing themselves to diisocyanates.**
- **Patients exposed only to diisocyanate vapor do not pose a significant risk of secondary contamination. Patients whose clothing or skin is contaminated with liquid diisocyanates or solvents containing diisocyanates can secondarily contaminate rescue and medical personnel by direct contact or through evaporation of diisocyanates.**
- **Diisocyanates are severely irritating to all tissues, in particular to the respiratory tract. Exposure may result in eye and skin irritation, coughing, chest pain, dyspnea. Laryngospasm and signs of pulmonary edema (shortness of breath, cyanosis, expectoration, cough) may occur.**
- **Asthmatic attacks may occur after exposure to very low diisocyanate concentrations.**
- **There is no antidote to be administered to counteract the effects of diisocyanates. Treatment consists of supportive measures.**

1. Substance information

Diisocyanates: TDI - $CH_3C_6H_3[NCO]_2$, CAS 26471-62-5 (mixture), CAS 584-84-9 (2,4-isomer), CAS 91-08-7 (2,6-isomer);
MDI - $CH_2(C_6H_4[NCO])_2$, CAS 144490-96-0 (mixture), CAS 5873-54-1 (2,4'-isomer), CAS 101-68-8 (4,4'-isomer);
HDI - $C_6H_{12}(NCO)_2$, CAS 822-06-0
Synonyms: TDI, diisocyanatotoluene, tolylene diisocyanate;
MDI, methylenediphenyl diisocyanate, methylene bis(phenylisocyanate);
HDI, hexamethylene diisocyanate, diisocyanatohexane
At room temperature, TDI and HDI are colorless to straw-colored liquids while MDI monomer is a colorless solid. Diisocyanates have a fruity, pungent odor. Diisocyanates are highly reactive even to hydroxyl and amino groups in human body cells. When heated to decomposition, they emit toxic fumes of nitrogen oxides.
The major application of diisocyanates is the manufacture of polyurethane foams, various plastic materials, and elastomers. In addition, diisocyanates are used as hardeners for paints, coatings, and adhesives.

2. Routes of exposure

Inhalation

Inhalation is the major route of diisocyanate exposure. The odor does not provide adequate warning of hazardous diisocyanate concentrations. Irritation of the respiratory tract and asthmatic attacks (constriction of the bronchi with severe dyspnea) can occur even at very low concentrations.

Skin/eye contact

Direct contact with diisocyanate liquids and vapor can cause severe irritation to skin or eyes.

Ingestion

Involuntary ingestion of diisocyanates is unlikely but could cause chemical burns of the mouth, throat, esophagus, and stomach.

Reviewed: 2012
Code: E012-004

3. Acute health effects

Diisocyanate exposure causes irritation of all tissues. However, often throat and lung irritation are predominant and may lead to chest tightness, coughing, shortness of breath, blood-streaked sputum. Non-specific airway hyperresponsiveness may occur and persist after cessation of exposure.
Asthmatic attacks may occur after exposure to very low diisocyanate concentrations. They can be immediate, delayed up to about 8 hours, or both.
Toxic pneumonitis as well as pulmonary edema may develop and may be delayed up to 24 hours after a severe exposure.
Euphoria, ataxia, memory loss, and muscle pain can occur after inhalation exposure.
Skin contact with diisocyanates can cause irritation and redness with blister formation.
Eye contact may result in severe irritation with immediate pain, lacrimation, lid edema, inflammation of conjunctiva and cornea, clouding of the eye surface, and secondary glaucoma.

Dose-effect relationships

Dose-effect relationships are as follows:

Diisocyanate concentration		Effect
0.0001 ppm	-	Asthmatic reactions in sensitized individuals possible
0.05-1.0 ppm	-	Irritation of skin, eyes, upper respiratory tract with conjunctivitis, sore throat, coughing
0.4 ppm	-	Odor detection
>1.0 ppm	-	Severe irritative and inflammatory reactions with persistent effects possible: bronchial hyperresponsiveness, pneumonitis, pulmonary edema
>2.5 ppm	-	Immediately dangerous to life

4. Actions

Rescuer self-protection

In response situations that involve exposure to potentially unsafe levels of diisocyanates (see below), pressure-demand, self-contained breathing apparatus and chemical-protective clothing shall be worn.
Patients exposed only to diisocyanate vapor do not pose a significant risk of secondary contamination. Patients whose clothing or skin is contaminated with liquid diisocyanates or solvents containing diisocyanates can secondarily contaminate other people by direct contact or through evaporation of diisocyanates.

Patient recovery

Patients should be removed from the contaminated zone immediately. If patients can walk, they should walk. Patients who are unable to walk may be removed on backboards or stretchers; if these are not available, carefully carry or drag patients to safety.
Immediate priorities must follow the "A, B, C's" (Airway, Breathing, Circulation) of resuscitation.

Decontamination

Patients exposed only to diisocyanate vapor who have no evidence of skin or eye irritation do not need decontamination. All others require decontamination.
Patients who are able and cooperative may assist with their own decontamination. If the exposure involved liquid diisocyanates or solvents containing diisocyanates and if clothing is contaminated, remove and double-bag the clothing.
Assure that exposed skin and hair have been flushed with plain water for at least 15 minutes. If not, continue flushing during other basic care and transport. Protect eyes during flushing of skin and hair.

Assure that exposed or irritated eyes have been irrigated with plain water or saline for at least 15 minutes. If not, continue eye irrigation during other basic care and transport.
Remove contact lenses if present and easily removable without additional trauma to the eye.

Initial treatment

Therapy will be empiric; there is no antidote to be administered to counteract the effects of diisocyanates.
Patients with bronchospasms should be treated as follows:
a) Aerolized $ß_2$-selective adrenergic agonist, e.g. 4 puffs of terbutaline, or salbutamol, or fenoterol from a metered dose inhaler (1 puff usually contains 0.25 mg terbutaline sulfate, or 0.1 mg salbutamol, or 0.2 mg fenoterol, respectively); may be repeated once after 10 min.
If inhalation is not possible, terbutaline sulfate (0.25-0.5 mg) subcutaneously or salbutamol (0.2-0.4 mg over 15 min) intravenously.
b) If a) is not effective or insufficient: theophylline (5 mg/kg body weight intravenously over 20-30 min).
c) If a) and b) are not effective or insufficient: 2 puffs of epinephrine (0.4 mg per puff) from a metered dose inhaler; may be repeated after 5 min.
The following measures are recommended if the airborne exposure concentration is 1.0 ppm or greater, if symptoms, e. g. eye irritation or pulmonary symptoms have developed, or if no exposure concentration can be estimated but exposure has possibly occurred:
Administration of 8 puffs of beclomethasone (800 µg beclomethasone dipropionate) from a metered dose inhaler.
Establishment of intravenous access.
Intravenous administration of 1.0 g methylprednisolone (or an equivalent steroid dose).
Note: Efficacy of corticosteroid administration has not yet been proven in controlled clinical studies.
If inhalation exposure has occurred, humidified air or oxygen should be provided. If signs of hypoxemia are present, humidified supplemental oxygen should be administered.
Intubation of the trachea or an alternative airway management should be considered in cases of respiratory compromise. When the patient's condition precludes this, consider cricothyrotomy if equipped and trained to do so.
If diisocyanates were in contact with the skin, chemical burns may result; treat as thermal burns: adequate fluid resuscitation and administration of analgesics, maintenance of the body temperature, covering of the burn with a sterile pad or clean sheet.
After eye exposure chemical burns may result; treat as thermal burns. Immediately consult an ophthalmologist.
Patients with persistent respiratory symptoms, patients exposed to an airborne concentration of 1.0 ppm or greater, and patients without available exposure measurements but suspected of being exposed to a concentration of 1.0 ppm or greater should be transported to a hospital/emergency department.
All asymptomatic patients potentially exposed to an airborne isocyanate concentration of 0.1 ppm or more should take 8 puffs of beclomethasone from a metered dose inhaler. Thereafter, 4 puffs should be administered every 2 hours for 24 hours. These patients should be observed for at least 8 hours.

Patient release/ follow-up instructions

Patients exposed to an airborne concentration of **less than 0.1 ppm who have no signs or symptoms of toxicity** may be discharged in the following circumstances:
a) The evaluating physician is experienced in the evaluation of individuals with diisocyanate exposure.

b) Information and recommendations for patients with follow-up instructions are provided verbally and in writing.
c) The physician is comfortable that the patient understands the health effects of diisocyanates and the provided follow-up instructions.
d) Site medical is notified, so that the patient may be contacted at regular intervals in the 24-hour period following release.
e) Heavy physical work should be precluded for 24 hours.
f) Exposure to cigarette smoke should be avoided for 72 hours; the smoke may worsen the condition of the lungs.

Patients who have eye injuries should be reexamined in 24 hours.

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Occupational Medicine &
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Carl-Bosch-Straße 38
67056 Ludwigshafen
Germany

BASF Corporation
Medical Department
100 Campus Drive, M/S F 221
Florham Park, NJ 07932
USA

Reviewed: 2012
Code: E012-004

BASF Chemical Emergency Medical Guidelines

Isocyanates C 1

Information and recommendations for doctors at hospitals/emergency departments

- **These guidelines are based on information about the diisocyanates toluene diisocyanate (TDI), diphenylmethane diisocyanate (MDI), and hexamethylene diisocyanate (HDI). Recommendations for other isocyanates might be similar. However, these guidelines do not cover special features potentially related to other isocyanates.**
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- **Diisocyanates are severely irritating to all tissues, in particular to the respiratory tract. Exposure may result in eye and skin irritation, coughing, chest pain, dyspnea. Laryngospasm and signs of pulmonary edema (shortness of breath, cyanosis, expectoration, cough) may occur.**
- **Asthmatic attacks may occur after exposure to very low diisocyanate concentrations.**
- **There is no antidote to be administered to counteract the effects of diisocyanates. Treatment consists of supportive measures.**

1. Substance information

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HDI - $C_6H_{12}(NCO)_2$, CAS 822-06-0
Synonyms: TDI, diisocyanatotoluene, tolylene diisocyanate;
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HDI, hexamethylene diisocyanate, diisocyanatohexane
At room temperature, TDI and HDI are colorless to straw-colored liquids while MDI monomer is a colorless solid. Diisocyanates have a fruity, pungent odor. Diisocyanates are highly reactive even to hydroxyl and amino groups in human body cells. When heated to decomposition, they emit toxic fumes of nitrogen oxides.
The major application of diisocyanates is the manufacture of polyurethane foams, various plastic materials, and elastomers. In addition, diisocyanates are used as hardeners for paints, coatings, and adhesives.

2. Routes of exposure

Inhalation

Inhalation is the major route of diisocyanate exposure. The odor does not provide adequate warning of hazardous diisocyanate concentrations. Irritation of the respiratory tract and asthmatic attacks (constriction of the bronchi with severe dyspnea) can occur even at very low concentrations.

Skin/eye contact

Direct contact with diisocyanate liquids and vapor can cause severe irritation to skin or eyes.

Ingestion

Involuntary ingestion of diisocyanates is unlikely but could cause chemical burns of the mouth, throat, esophagus, and stomach.

3. Acute health effects

Diisocyanate exposure causes irritation of all tissues. However, often throat and lung irritation are predominant and may lead to chest tightness, coughing, shortness of breath, and blood-streaked sputum.
Non-specific airway hyperresponsiveness may occur and persist after cessation of exposure.
Asthmatic attacks may occur after exposure to very low diisocyanate concentrations. They can be immediate, delayed up to about 8 hours, or both.
Toxic pneumonitis as well as pulmonary edema may develop and may be delayed up to 24 hours after a severe exposure.
Euphoria, ataxia, memory loss, and muscle pain can occur after inhalation exposure.
Skin contact with diisocyanates can cause irritation and redness with blister formation.
Eye contact may result in severe irritation with immediate pain, lacrimation, lid edema, inflammation of conjunctiva and cornea, clouding of the eye surface, and secondary glaucoma.

Dose-effect relationships

Dose-effect relationships are as follows:

Diisocyanate concentration		Effect
0.0001 ppm	-	Asthmatic reactions in sensitized individuals possible
0.05-1.0 ppm	-	Irritation of skin, eyes, upper respiratory tract with conjunctivitis, sore throat, coughing
0.4 ppm	-	Odor detection
>1.0 ppm	-	Severe irritative and inflammatory reactions with persistent effects possible: bronchial hyperresponsiveness, pneumonitis, pulmonary edema
>2.5 ppm	-	Immediately dangerous to life

Potential sequelae

After one high-concentration exposure individuals may exhibit persistent asthma and non-specific bronchial hyperresponsiveness. Diisocyanates are potent sensitizers. Reduction in lung function and respiratory symptoms related to narrowing of the bronchi may persist.

4. Actions

Decontamination

Patients exposed only to diisocyanate vapor do not pose a significant risk of secondary contamination. Patients whose clothing or skin is contaminated with liquid diisocyanates or solvents containing diisocyanates can secondarily contaminate other people by direct contact or through evaporation of diisocyanates.
Patients who are able and cooperative may assist with their own decontamination. If the exposure involved liquid diisocyanates or solvents containing diisocyanates and if clothing is contaminated, remove and double-bag the clothing.
Assure that exposed skin and hair have been flushed with plain water for at least 15 minutes. If not, continue flushing during other basic care. Protect eyes during flushing of skin and hair.
Assure that exposed or irritated eyes have been irrigated with plain water or saline for at least 15 minutes. If not, continue eye irrigation during other basic care.
Remove contact lenses if present and easily removable without additional trauma to the eye.

Initial treatment

Therapy will be empiric; there is no antidote to be administered to counteract the effects of diisocyanates.
Patients with bronchospasms should be treated as follows:
a) Aerolized $ß_2$-selective adrenergic agonist, e.g. 4 puffs of terbutaline, or salbutamol, or fenoterol from a metered dose inhaler (1 puff usually contains 0.25 mg terbutaline sulfate, or 0.1 mg salbutamol, or 0.2 mg fenoterol, respectively); may be repeated once after 10 min.

If inhalation is not possible, terbutaline sulfate (0.25-0.5 mg) subcutaneously or salbutamol (0.2-0.4 mg over 15 min) intravenously.
b) If a) is not effective or insufficient: theophylline (5 mg/kg body weight intravenously over 20-30 min).
c) If a) and b) are not effective or insufficient: 2 puffs of epinephrine (0.4 mg per puff) from a metered dose inhaler; may be repeated after 5 min.
The following measures are recommended if the airborne exposure concentration is 1.0 ppm or greater, if symptoms have developed, or if no exposure concentration can be estimated but exposure has possibly occurred:
If not already done, initially, administration of 8 puffs of beclomethasone from a metered dose inhaler.
Thereafter, administration of 4 puffs every 2 hours for 8 hours.
If not already done, establishment of intravenous access and intravenous administration of 1.0 g methylprednisolone (or an equivalent steroid dose).
Note: Efficacy of corticosteroid administration has not yet been proven in controlled clinical studies.
If inhalation exposure has occurred, humidified air or oxygen should be provided. If signs of hypoxemia are present, humidified supplemental oxygen should be administered.
Intubation of the trachea or an alternative airway management should be considered in cases of respiratory compromise. When the patient's condition precludes this, consider cricothyrotomy if equipped and trained to do so.
If diisocyanates were in contact with the skin or eyes chemical burns may result; treat as thermal burns: adequate fluid resuscitation and administration of analgesics, maintenance of the body temperature, covering of the burn with a sterile pad or clean sheet.
After eye exposure chemical burns may result; treat as thermal burns. Immediately consult an ophthalmologist.
All asymptomatic patients potentially exposed to a diisocyanate concentration of 0.1 ppm or more should take 8 puffs of beclomethasone from a metered dose inhaler. Thereafter, 4 puffs should be administered every 2 hours for 8 hours. These patients should be observed for at least 8 hours.

Further evaluation and treatment

To the standard intake history, physical examination, and vital signs add pulse oximetry monitoring and a PA chest X-ray.
Spirometry should be performed. Routine laboratory studies should include a complete blood count, blood glucose and electrolyte determinations.
Evidence of pulmonary edema - hilar enlargement and ill-defined, central-patch infiltrates on chest radiography - **is a late finding that may occur 6 to 8 hours or later after exposure. The chest X-ray is typically normal on first presentation to the emergency department even with severe exposures.**
Patients who have possible exposure to an airborne concentration of 1.0 ppm or greater should be observed for a minimum of 8 hours and reexamined frequently before confirming the absence of toxic effects.
If oxygen saturation is less than 90 % or if it appears to drop, immediately check arterial blood gasses and repeat the chest X-ray.
If blood gasses begin to show deterioration and/or if the chest X-ray begins to show pulmonary edema start oxygen supplementation.
Should it become clear that pulmonary edema is worsening positive end-expiratory pressure (PEEP) therapy should be started within the first 24 hours after exposure even if oxygenation can be maintained by mask.
Early indication for PEEP therapy is tachypnea (>30/min) with a simultaneous decrease of the partial pressure of carbon dioxide.

An inadequate increase or a relative decrease of the partial pressure of oxygen despite hyperventilation indicates the development of pulmonary edema. Fluid intake/output and electrolytes should be monitored closely. Avoid net positive fluid balance. Central line or Swan-Ganz catheterization might be considered, to optimize fluid management.
As long as signs of pulmonary edema are present, intravenous administration of 1 g methylprednisolone (or an equivalent steroid dose) should be continued in intervals of 8-12 hours.
Prophylactic antibiotics are not routinely recommended, but may be used based on the results of sputum cultures. Pneumonia can complicate severe pulmonary edema.

Patient release/ follow-up instructions

Patients exposed to an airborne concentration of **less than 0.1 ppm who have no signs or symptoms of toxicity** as well as patients exposed to a concentration of **0.1 ppm or more who have a normal examination and no signs or symptoms of toxicity after observation for 8 hours** may be discharged from the emergency department in the following circumstances:
a) The evaluating physician is experienced in the evaluation of individuals with diisocyanate exposure.
b) Information and recommendations for patients with follow-up instructions are provided verbally and in writing.
c) The physician is comfortable that the patient understands the health effects of diisocyanates.
d) Site medical is notified, so that the patient may be contacted at regular intervals in the 24-hour period following release from the emergency department.
e) Heavy physical work should be precluded for 24 hours.
f) Exposure to cigarette smoke should be avoided for 72 hours; the smoke may worsen the condition of the lungs.

Patients who have eye injuries should be reexamined in 24 hours.
Post discharge spirometry should be repeated until values return to the patient's baseline values.

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Reviewed: 2012
Code: E012-004

Isocyanates D 1

Information and recommendations for patients

- **Patients exposed only to diisocyanate vapor do not pose a significant risk of secondary contamination. Patients whose clothing or skin is contaminated with liquid diisocyanates or solvents containing diisocyanates can secondarily contaminate rescue and medical personnel by direct contact or through evaporation of diisocyanates.**
- **Diisocyanates are severely irritating to all tissues, in particular to the respiratory tract. Exposure may result in eye and skin irritation, coughing, chest pain, dyspnea. Swelling of the throat and signs of accumulation of fluid in the lungs (shortness of breath, cyanosis, expectoration, cough) may occur.**
- **Asthmatic attacks (constriction of the bronchi with severe dyspnea) may occur after exposure to very low diisocyanate concentrations.**
- **There is no antidote to be administered to counteract the effects of diisocyanates. Treatment consists of supportive measures.**

Substance information

These guidelines are based on information about some of the most frequently used diisocyanates: toluene diisocyanate (TDI), diphenylmethane diisocyanate (MDI), and hexamethylene diisocyanate (HDI). Recommendations for other isocyanates might be similar. However, these guidelines do not cover special features potentially related to other isocyanates.
Synonyms: TDI, diisocyanatotoluene, tolylene diisocyanate;
MDI, methylenediphenyl diisocyanate, methylene bis(phenylisocyanate);
HDI, hexamethylene diisocyanate, diisocyanatohexane
At room temperature, TDI and HDI are colorless to straw-colored liquids while MDI monomer is a colorless solid. Diisocyanates have a fruity, pungent odor. Diisocyanates are highly reactive even to hydroxyl and amino groups in human body cells. When heated to decomposition, they emit toxic fumes of nitrogen oxides.
The major application of diisocyanates is the manufacture of polyurethane foams, various plastic materials, and elastomers. In addition, diisocyanates are used as hardeners for paints, coatings, and adhesives.

What immediate health effects can result from exposure to diisocyanates?

Most exposures to diisocyanates occur from breathing the vapor. Exposure to small amounts irritates the eyes, nose, throat and lungs causing cough, chest pain, and shortness of breath. Higher exposure levels can cause severe breathing difficulty, inflammation of the lung, and accumulation of fluids in the lung.

Are any future health effects likely to occur?

A single small exposure from which a person recovers quickly is not likely to cause delayed or long-term effects. However, some persons develop allergies even after a single diisocyanate exposure. In these people, a very low diisocyanate concentration may trigger future asthma attacks. After serious or repeated exposures permanent breathing difficulty might develop. Eye and skin exposure to liquid diisocyanates may result in permanent tissue damage.

Follow-up instructions

Keep this page and take it with you to your next appointment. Follow only the instructions checked below.

( ) Call your doctor or the Emergency Department if you develop any unusual signs or symptoms within the next 24 hours, especially:
- coughing or wheezing
- difficulty breathing or shortness of breath
- increased pain or a discharge from exposed skin or eyes
- chest pain or tightness

( ) No follow-up appointment is necessary unless you develop any of the symptoms listed above.

( ) Call for an appointment with Dr. _____ in the practice of _____ When you call for your appointment, please say that you were treated in the Emergency Department at _____ Hospital by _____ and were advised to be seen again in __ days.

( ) Return to the Emergency Department/_____ Clinic on (date) _____ at _____ am/pm for a follow-up examination.

( ) Do not perform vigorous physical activities for 1 to 2 days.

( ) You may resume everyday activities including driving and operating machinery.

( ) Do not return to work for __ days.

( ) You may return to work on a limited basis. See instructions below.

( ) Avoid exposure to cigarette smoke for 72 hours; smoke may worsen the condition of your lungs.

( ) Avoid drinking alcoholic beverages; alcohol may worsen your clinical condition.

( ) Avoid taking the following medications: _____
_____

( ) You may continue taking the following medication(s) that your doctor(s) prescribed for you: _____
_____

( ) Other instructions: _____
_____

Signature of patient _____ Date _____

Signature of physician _____ Date _____

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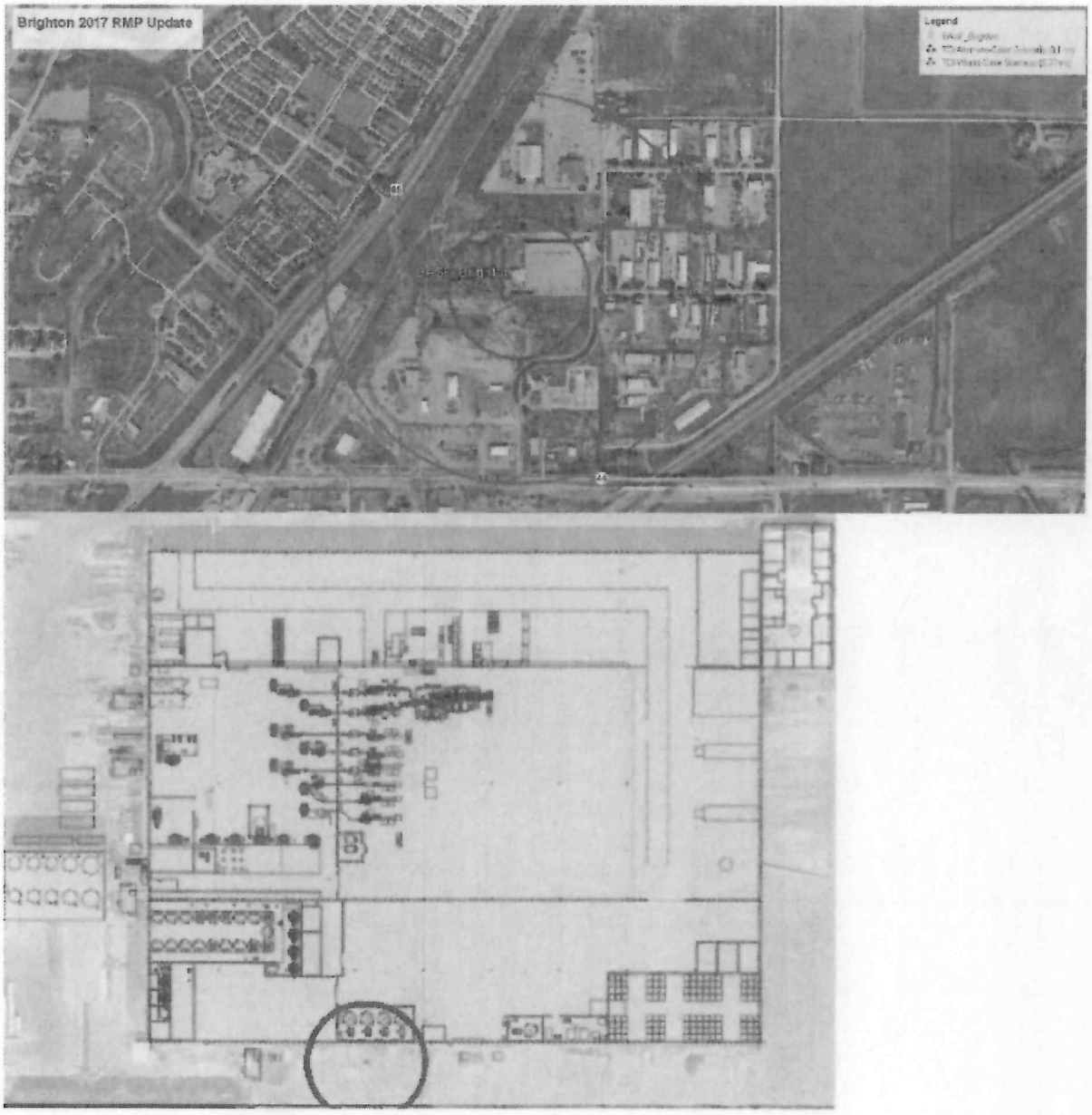
U.S. Department of Health & Human Services - Agency for Toxic Substances and Disease Registry, ed. Toluene Diisocyanate. Atlanta, 1994. (Managing Hazardous Materials Incidents; vol III.)

ATTACHMENT H - Worst Case Scenarios

Worst Case & Most Likely Scenarios

I. TDI leak at bulk tanker during unloading (Southside of building – circled below)



The identified "Worst Case" scenario discussed is a release of TDI to the ground and air at the unloading truck station. (NIOSH IDLH = 25.5 ppm, OSHA TWA = 5 ppb, OSHA PEL = 20

ppb) TDI, is a colorless to pale yellow liquid at room temperature with a sharp, pungent odor that can cause respiratory irritation.

1. Upon discover of leak by off-loading personnel, notify the shift supervisor and/or announce a leak location via plant radio and hit the TDI E-Stop alarm.
2. The offloading operator or truck driver will immediately shut down the one of two internal truck valve to stop the flow of material. ***(All tanker truck off loads are 100% attending thus a release of the entire tank contents is not realistic)***
3. The shift supervisor will make the announcement via radio for ERT to report to the scene.
4. The shift supervisor will call for all employee to leave the immediate area.
5. The shift supervisor will then contact the Management Team if the spill happens during off hours with an estimated volume of the release.
6. The EHS Specialist or designee will make the required notifications if the release is believed to be above 100 lbs. (See Section 4.0)

Cameras have been installed in the ISO Day Tank rooms and ISO Bulk rooms. By viewing these cameras you may be able to determine the size of the release. Only ERT personnel will be allowed to control spills greater than 10 lbs. Personnel responding to a spill of TDI are required to wear at SCBA for initial entry. PPE maybe downgraded (Full face with OV cartridge) dependent on TDI level and Incident commander command. These cartridges are only effective for TDI up to a concentration not to exceed 250 ppb. BASF requires the buddy system to be used at all times regardless the size of a spill. If your partner must leave the area, you must also leave.

Guidelines for Emergency Response Spill Quantities

Chemical	Quantity	Response
TDI	< 10 lbs (incidental spills)	Training production operators (Decon solution and Full face respirator with OV cartridge)
TDI	>10 lbs	ERT Offensive Responsive
Flammables	>10 lbs	For spills greater than 10lbs, only ERT personnel may respond
MDI	>10 lbs	ERT Offensive Responsive

ATTACHMENT I

TDI ER PLANNING GUIDE

BASF Corporation

EMERGENCY RESPONSE ASSESSMENT/PLANNING GUIDE

CHEMICAL: Toluene Diisocyanate

SYNONYM TDI		**PHYSICAL STATE** Liquid	**ODOR** Sharp Pungent	**ODOR THRESHOLD** 0.01 - 0.4 ppm	
CHEMICAL FORMULA CH3 C6 H3(NCO)2		**MOLECULAR WEIGHT** 174.2	**CAS NO.** 584-84-9	**EXPOSURE LIMITS** OSHA 5 ppb TWA 20 ppb STEL	**IDLH** 2.5 ppm
LEL 0.9%	**UEL** 9.5%	**FLASH POINT (°F)** 270 (Open Cup)	**VAPOR PRESSURE** 0.05mm @ 20°C	**FLAMMABILITY CLASS (OSHA)** Class III B Combustible Liquid	
RQ 100 lbs.	**SPECIFIC GRAVITY** 1.22 @25°C	**UN or NA #** UN 2078	**APPEARANCE** Colorless to Pale Yellow		
IONIZATION POTENTIAL (eV) Not Detected by PID. See IH Monitoring Below			**PID RESPONSE FACTOR** N/A	**H20 SOLUBILITY** Insoluble	

DECON SOLUTION
Isocyanate Dec Solution (90% H_2O 3-8% ammonia and 2-7% detergent) Add about 10 parts of decon solution for every part of TDI.

EVACUATION ZONE
Evacuate local and downwind areas as conditions warrant to prevent exposure. TDI spills may expose downwind areas to toxic concentrations over considerable distances particularly during hot weather conditions.

FIRE RESPONSE
Use water fog or spray, dry chemical, foam or CO_2. Water or foam may cause frothing.

HEALTH HAZARDS
Skin and Eye: Prolonged contact with the skin may cause redness, swelling and blistering with possible skin sensitization. Contact with the eyes may result in severe irritation, pain, lacrimation, swelling of the lids and mild damage to the corneal epithelium.

Inhalation: Potent sensitizer and lung irritant, can cause asthma-like condition/shortness of breath.

IH MONITORING
Direct Read: Drager Detector Tubes, Scott/Bacharach SureSpot, MDA Systems TLD-1 or SPM for concentrations from 0.5-60ppb; DOD Technologies ChemiLogic Portable X (CLPX)

TWA Monitoring: K&M SafeAir Colorimetric Badge, OSHA Methods 42 & 47 - Chemically impregnated glass fiber filter

Surface Contamination: Aromatic Isocyanates Surface Swipes Pads from CLI inc.

PERSONAL PROTECTIVE EQUIPMENT
Level A for unknown conditions.

Respirator: SCBA; Full face APR w/organic vapor/HEPA cartridge combination up to 200 ppb.
Gloves: Neoprene, PVC, Butyl, Nitrile
Suit: Lakeland Chem Max 3 suit with hood, Saranex-23, DuPont CPF 4

REACTIVITY
Reacts strongly when in contact with water to form CO_2. May react with acids, amines, bases and alcohols. Avoid temperatures > 40°C for extended periods of time. Has no oxidation or corrosive properties.

ATTACHMENT J

Post Response Critique Form

Incident Assessment

Positive

Could Use Improvement

Action Items

Communications

Positive

Could Use Improvement

Action Items

Equipment

Positive

Could Use Improvement

Action Items

People Resources

Positive

Could Use Improvement

Action Items

Selection of PPE

Positive

Could Use Improvement

Action Items

Decontamination and Clean-up Operations

Positive

Could Use Improvement

Action Items

Medical Response

Positive

Could Use Improvement

Action Items

Site Security/Control

Positive

Could Use Improvement

Action Items

Miscellaneous

Positive

Could Use Improvement

Action Items

Name of Drill Participant or Observer: _____

ATTACHMENT K

Evacuation Map

EMERGENCY PLAN PLOT PLAN

ROUTE TO EXIT

FIRST AID/BLOODBORNE KIT

PULL ALARM STATIONS

EXIT

SHELTER

EMERGENCY SHOWER AND EYEWASH

SPILL RESPONSE CARTS

FIRE EXTINGUISHER

HYDRANT

OFFICE AREA

ATTACHMENT L

Public Communication Responsibilities

UPDATED July 13, 2017

Site Emergency Response Plans – Site / Public Communications Representative section

Site / Public Communications Representative – as assigned by Site Manager

A: Responsibility

Coordinates activities related to community relations, media relations and employee communications in conjunction with Corporate Communications.

After learning of incident immediately calls Manager, Site/Community Relations in Corporate Communications (Maureen Paukert, office - 973-245-6077; cell: 973-975-6234) to provide information on what is known. If unable to reach Maureen, contact Donna Jakubowski (office – 973-245-6260; cell: 732-407-6116), or Daniel Pepitone (office – 973-245-7168; cell: 973-968-0825).

Corporate Communications will draft initial statement about the incident. The statement will be shared with the Site Manager, Site Communications Representative, Vice President of Corporate Communications; Marketing Communications Manager for the business; and designated Media Relations personnel in Corporate Communications.

[At any time, the Corporate Incident Support Team may be activated. If this occurs, Maureen Paukert will be directing communications as a member of that team.]

Site communications representative will then keep in contact with Corporate Communications to provide updated information for subsequent statements, Q&As and other documents, and to discuss plans for onsite news conferences and other media interaction, as well as communications with employees, near neighbors, elected officials and others.

If the site follows the Joint Incident Command (JIC) structure with local officials, the designed JIC spokesperson will also participate in discussions about joint statements and news conferences. The site communications representative is responsible for working closely with the JIC on these activities.

If a news conference is held, the site communications representative or site personnel assigned by communications representative will – as directed by Corporate Communications – serve as onsite point person for media. This includes checking media credentials and logging names of media in attendance, distributing background / news kits, and coordinating any visual aids such as site and area maps, photos or other items.

According to BASF's Corporate Policy on responding to inquiries from the media and the public BC011.001, only approved company spokespeople are allowed to speak with news reporters. For the most part, approved individuals are Corporate Communications staff members, Site Communications Manager, Site Manager and his / her designated managers, and senior level BASF executives.

B. Emergency Action

In addition to the site's emergency response team's plans for assembly in site conference room or other agreed internal site meeting location, the site communications representative will:

Work with Human Resources in responding to and/or communicating with medical facilities / hospitals for updates on injury status of employees.

Compile lists of injured and/or casualties.

After hearing from the Human Resources representative that next of kin in cases of death or serious injuries have been notified, site communications representative will inform Corporate Communications.

[No names or addresses of employees seriously or fatally injured will be released to the media until the next of kin are notified and then only as

agreed by the Site Manager, Human Resources and Corporate Communications.]

ATTACHMENT M

Spill Kit Inventory

Spill Response cart inventory

- 2- bags of Absorbent
- 2- sizes of each size (XL-XXL-XXXL) Chemical suits
- 1- box of each size of Green Nitrile gloves (LG-XL-XXL)
- 4- pairs of each size Green Nitrile gloves (9-10)
- 2- pairs of each size of Journeyman. (cut-leather-anti vibe) gloves(LG-XL-XXL)
- 1- roll of Chemical Tape
- 1- roll of caution tape
- 1- roll of duct tape
- 10-15- sheets of Absorbent pads
- 4- 5 gallon pail liner bags(for trash)
- Small amount of rags(8-10)
- 1-marker
- 1 – scrub brush
- 2- face shields with hard hat attachment
- 2- slip over chemical boots
- 1- Drum tourniquet
- 2- goggles
- 1-10x10 plastic sheet (for PPE removal)
- 2- absorbent socks
- 1- Decon Solution Sprayer
- 2 shovels
- Two incident commander vests