INCIDENT INVESTIGATION

Revision History

Rev. #	Description of Change	Date	Revised By
0	Initial Issue	July 2016	PSM RMP Solutions

Purpose

This document summarizes how Inland Star Distribution Centers, Inc. complies with the incident investigation requirements for the storage of hazardous chemicals at this facility. The purpose of investigating serious incidents and near-misses is to understand what happened (or could have happened) and then to prevent any recurrence of similar incidents, thereby improving the safety of the process. Identifying factors that contributed to or root cause(s) of a release, near miss or injury can help lead to improvements and modifications in chemical inventory, training, operations, and management programs.

Responsibilities

The Director of EHS[3] is responsible for the following activities:

- Ensures that an incident investigation is conducted for each incident which resulted in or could reasonably have resulted in a catastrophic release of a highly hazardous chemical in the workplace.
- Ensures that the incident investigation procedures are followed, the investigation is documented, recommendations identified during the investigation are resolved in a timely manner, and the resolutions are documented.
- Reviews the findings of the investigation with affected personnel.
- Retains the incident investigation report for five years.

Scope

An incident investigation shall be performed any time there is an incident which resulted in, or which could reasonably have resulted in (near-miss), a catastrophic release of a hazardous chemicals. For the purposes of this guideline, a catastrophic release is defined as a major uncontrolled emission, fire, or explosion involving hazardous chemicals that presents serious danger to employees, including contract employees working on-site.

All hazardous chemical releases meeting any one of the following criteria should be investigated; the level of investigation may depend on the severity of the release. A near-miss that could have had resulted in one of these consequences should also be investigated.

1) Quantity of Hazardous Chemicals Released:

- The release of a chemical greater than the reportable amount.

Chemical	Reportable Quantity
Methyltrichlorosilane	500 Pounds
Peracetic Acid	500 Pounds
Epichlorohydrin	100 Pounds
Cyclohexylamine	10,000 Pounds

- A chemical leave property via storm sewer, city sewer, venting, etc., such that outside agencies are notified, **and** regional, state, and/or federal follow-up work is required.
- There is the possibility of outside governmental agencies (EPA, OSHA, state, and local etc.) imposing fines and/or initiating their own investigations related to the release.
- Notification of the incident comes from off-site personnel (area residents, police department, fire department, state, city, or local etc.).
- Local media inquires about the incident.
- Repeated nuisance odors.

2) Property Damage:

- Any incident involving hazardous chemicals that resulted in or could have resulted in significant on-site or off-site property, equipment or environmental damage.
- Facility production is temporarily suspended or reduced due to a release of hazardous chemicals or damage to the containers storing hazardous chemicals.

3) Fire or Explosion: Any fire or explosion which involved or could have involved hazardous chemicals.

4) Injuries: Any injury that resulted from or could have resulted from direct exposure to hazardous chemicals or from indirect consequences of an accidental hazardous chemical release (e.g., a window shattering after a deflagration) and that requires medical treatment or hospitalization.

5) Emergency Response: Any incident involving hazardous chemicals which required or could have required implementation of facility's emergency action plan from outside agencies, including a partial or full plant evacuation or shelter-in-place.

6) Management Review: Facility management determines that the incident should be investigated even though the incident does not meet the specific criteria listed above.

Summary of Requirements

Timing: The incident investigation must be initiated as promptly as possible, but at least within 48 hours of the incident.

Team: A team must be established to conduct the investigation. The team should include at least one person knowledgeable in hazardous chemical storage, a contract employee if the incident involved a contract employer's work, and other personnel with the knowledge and experience to thoroughly investigate and analyze the incident.

Written Report: A report that includes the date of the incident, the date the investigation began, a description of the incident, factors that contributed to the incident, and any recommendations resulting from the investigation must be developed. The report, including the resolutions to the recommendations, must be retained for at least five years.

Recommendation Follow-Up: A system to address and resolve the team's findings and recommendations must be established. All resolutions and corrective actions taken will be documented.

Review of Incident: The report, including the recommendations and associated resolutions, must be reviewed with affected personnel, including contract employees, whose job tasks are relevant to the incident findings. The review must be documented.

Procedures for Conducting an Incident Investigation

The steps and procedures for conducting an incident investigation are described below.

1) Initial Investigation Response

In the event of a serious incident, the relative priority of response should be:

a. Providing medical and other safety and health assistance to personnel.
b. Immediately contact emergency response personnel, including off-site responders if needed.
c. Determining whether any notification must be made to a governmental agency (OSHA, EPA, OES, CUPA, etc.).
d. Directing activities related to the investigation in a way that preserves relevant information and evidence. Activities to preserve information may include:
   - Securing and barricading the scene when appropriate.
   - Initiating the collection of transient information.
   - Preliminary interviewing of witnesses and personnel, etc.

The investigation is assumed to commence when all emergency response activities have been completed, the "all-clear signal" has been given, and incident investigation team members begin to gather information and/or tour the site to determine the cause.

A key element of this phase of the investigation is to get an accurate list of witnesses of all kinds that will need to be interviewed in greater detail by the investigation team. Another important part of the initial response is to take photographs which may prove useful as the investigation continues. This is critical if the scene must be disturbed before the investigation team can complete its review. Responsibility for this early phase of incident response should rest with Director of EHS[3].

2) Establish Incident Investigation Team

The Director of EHS[3] is responsible for selecting the members of the Incident Investigation Team (hereafter referred to as the Team). The Team should consist of at least one person knowledgeable in hazardous chemical storage, including a contract employee if the incident involved the work of the contractor, and other persons with appropriate knowledge and experience to thoroughly investigate and analyze the incident.

A Team Leader may be designated by the Director of EHS[3]. The Team Leader's duties include:

- Controlling the scope of team activities by identifying which lines of investigation should be pursued, referred to another group for study, or deferred.
- Calling and presiding over meetings.
- Assigning tasks and establishing timetables.
- Ensuring that no potentially useful data source is overlooked.
- Keeping management advised of the progress of the investigation.

The Team is provided full access to the site, document files, and to all employees who may have input to the investigation process. Any employees feeling they have useful information may be encouraged to contact the Team.

3) Determine the Facts

A prompt and comprehensive search for facts surrounding the incident is the first major undertaking of the Team. The Team may conduct the following types of activities as it performs its fact-finding function.

Visit the Incident Scene
Team members should visit the incident scene before physical evidence has been disturbed. The Team Leader is responsible for ensuring that team members are not exposed to any dangers as the visit is conducted. Personal safety of the team members should take priority over the incident

investigation process at all times. No team member should be forced to take any actions which he or she reasonably thinks would expose him or others to any hazards.

Team members may first review the scene individually, discuss their preliminary findings, and then repeat the process as a group to prepare a written log of observations and important comments.

Some of the things that may be noted during the scene visit are:

- Indication of any unusual activities in the area (welding or cutting equipment, tools, motorized equipment, etc.).
- Status of safety equipment in area (Was equipment used? Was it readily available? Any indications of safety equipment problems?).
- Any indications of fire or explosion damage and whether any combustible materials were involved.
- Whether storage containers in the area were properly labeled and identified.

The Team may prepare visual aids such as photographs, sketches and graphical representations of information that may be useful during the investigation.

Conduct Interviews

The Team may take brief statements from any eyewitnesses who are available during the inspection of the scene. More detailed interviews may be arranged later. It is a good practice to interview each witness alone. The witness should be more candid and less likely to be influenced by the statements of other witnesses.

Evaluate Key Equipment

The Team should determine whether any key equipment should be disassembled (if possible) and should then observe such disassembly and record findings. Any equipment which may have failed or otherwise may have contributed to the incident should be preserved and/or carefully documented.

Review Documentation

The Team may review all sources of potentially useful information such asprevious reports, standard and emergency procedures, safety data sheets, oral instructions, change records, training and performance records of employees, etc. Moreover, the Team should consider whether any sampling or forensic analysis should be conducted.

The Team may carefully document all sources of information gathered during the fact-finding process for inclusion in the incident investigation report.

4) Determine the Cause and/or Contributing Factors

It is important that the root cause(s) of the incident, as well as contributing factors, be identified for the development of effective recommendations to correct and prevent a recurrence. The procedure for determining cause(s) of the incident follows:

1) Develop a chronology of events which occurred before, during and after the incident. The focus of the chronology may be solely on what happened and what actions were taken. List alternatives when the status cannot be definitely established due to missing or contradictory information.

2) Identify any conditions or circumstances which deviated from normal. Identify all hypotheses of the causes of the incident based on these deviations.

3) Test the various cause hypotheses against all available evidence and information, and list in order of likelihood. In each case establish what the root cause and secondary cause(s) was. As a Team, strive to agree on the most likely root cause(s) and secondary cause(s). Reference the lists of contributing causes in the report.

5) Recommend Corrective and Preventive Actions

During the determination of the cause process, some actions may surface that could have eliminated or reduced the chances for the incident having occurred. In some cases, these recommendations may not relate to the most likely cause but may still be an appropriate recommendation to improve safety.

The Team should formalize these recommendations in two distinct areas:

- Engineering changes should encompass those actions which include physical changes to the chemical inventory.
- Administrative changes should include procedural changes, training, etc.

The Team may prioritize the implementation of corrective and preventive actions. If the Team recommends that changes should be made prior to resumption of operations, the report should include the recommended time frame for the change. In other situations, an approximate time frame for implementation may be included.

The Team's recommended changes may updates or the implementation of various sections of the PSM/CalARP Program. For example, if inventory modifications are recommended, the Management of Change and Pre-Startup Safety Review programs must be applied. If operating procedures require revisions, Inland Star Distribution Centers, Inc. will ensure that all personnel who utilize the procedures are informed of and trained on the procedural changes prior to needing the procedures.

The recommended changes should be completed as soon as possible. The CalARP regulation requires Inland Star Distribution Centers, Inc.to enter into an agreement with the Los Angeles County Fire Department on a timetable for resolving the recommendations. Otherwise, the recommendations shall be completed no later than 1.5 years after the completion of the investigation, or two years after the date of the incident, whichever is the earlier of the two dates. All resolutions and corrective actions taken will be documented on the incident investigation report, along with actual completion dates.

OSHA considers an employer to have resolved recommendations when the employer has either adopted the recommendations or justifiably declined to do so. An employer can justifiably decline to adopt a recommendation where it can document that:

- Information which was not known by incident investigation team members becomes available at a later date and eliminates the need for the recommendation. Note that the initial incident investigation may have to be updated to reflect the additional information;
- The recommendation is not necessary to protect the health of employees or contractors, the public or the environment;
- An alternative measure would provide a sufficient level of protection; or,
- The recommendation is not feasible.

Reasons for rejecting recommendations should be documented and communicated to the Team, and any subsequent recommendations should also be resolved.

There is no requirement governing when the incident investigation must be completed. The Team should complete its work when it believes it has identified the circumstances, causes and contributing factors of the accident and all appropriate recommendations.

6) Prepare Incident Investigation Report

A report should be prepared at the conclusion of the investigation which includes at a minimum:

1) Date investigation began.

2) A description of the incident, including the following Five Year Accident History data elements:
   - Date, time, and approximate release duration;
   - Regulated substance(s) released;
   - Estimated quantity released (in pounds);
   - NAICS code for the process involved;
   - Type of release event and its source;
   - Weather conditions, if known;
   - Onsite impacts;
   - Known offsite impacts;

- Initiating event and contribution factors;
- Whether off-site responders were notified, if known; and
- Operational or process changes that resulted from the investigation.

3) Any recommendations resulting from the investigation.

Attachment A contains an Incident Investigation Report (II) form and an incident investigation log along with instructions on how to complete these documents. Different forms may be used provided that they contain appropriate documentation. All incident investigation documentation will be stored on-site for a minimum of five years.

7) Communicating Results/Follow-Up

The results of incident investigations should be reviewed with employees, including contract employees, whose job tasks are relevant to the incident findings. The Team may consider incident circumstances in determining who the affected employees are.

The Director of EHS[3] may arrange for one or more review sessions with affected employees. The purpose of the meeting is to explain the outcome of the investigation. They should ensure that all appropriate affected personnel are in attendance at a review session. Documentation of review sessions may include the names of all individuals in attendance as well as any major issues that were raised during the review.

Process Hazard Analyses for the hazardous chemical storage should include a review of any previous incidents which resulted in or had a likely potential for catastrophic consequences in the workplace. The Incident Investigation Log should be reviewed before any PHA studies are conducted to identify incidents or near misses that should be discussed.

Attachment A

Incident Investigation Report

Incident Investigation Log

Form Instructions

Incident Investigation Report **Investigation No. _____**

Form II-1A: Incident Summary

Date of Incident: _____ **Date Investigation Commenced**: _____

Time Incident Began: _____ **Time Investigation Commenced**: _____

Facility Information:

Name: Inland Star Distribution Centers, Inc.
Address: 2132A East Dominquez Street Carson, CA 90810
Affected Chemical:
NAICS Code: Normal Hazardous Chemical Inventory (pounds):

Release Data:

Total Quantity Hazardous Material Chemical Released (pounds): Release Duration (hours, minutes):

Incident Type (check any that apply):

☐ Near-Miss	☐ Liquid Spill/Evaporation	☐ Explosion
☐ Gas Release	☐ Fire	☐ Uncontrolled/Runaway Reaction

Primary Source of Release (check any that apply):

☐ Storage Container	☐ Transporting on Forklift	☐ Upon Arrival
☐ During Delivery	☐ Outgoing	☐ Other: _____

Initiating Event (select the one that best applies):

☐ Containment Failure	☐ Natural Conditions (Weather Conditions, Earthquake)
☐ Human Error	☐ Unknown

Cause(s) Contributing to Release (check any that apply):

☐ Equipment Failure	☐ Overpressurization	☐ Unsuitable Equipment
☐ Human Error	☐ Visual Inspections Inadequate	☐ Unusual Weather Conditions
☐ Improper Procedures Followed	☐ Management Error	☐ Other: _____

Types of Changes Recommended to Prevent Recurrence (check any that apply):

☐ Improved or Upgraded Equipment	☐ Revised Procedures	☐ Changed Process
☐ Revised Inspection Plan	☐ New Mitigation Systems	☐ Reduced Inventory
☐ Revised Training	☐ Revised Emergency Response Plan	☐ None
		☐ Other: _____

Form II-1B: Weather Conditions and Incident Impact

Weather Conditions at the Time of Event (provide requested information):

Wind Speed (mph, m/s, or knots):	_____
Wind Direction:	_____
Temperature (degrees F):	_____
Atmospheric Stability Class (A, B, C, D, E or F):	_____
Precipitation Present (yes or no):	_____
Weather Conditions Unknown:	_____

Known On-Site Impacts (provide requested information):

	Employees or Contractors	Public Responders	Public
Number of Deaths:	_____	_____	_____
Number of Injuries:	_____	_____	_____
Number Evacuated:	_____	_____	_____
Number Sheltered-In-Place:	_____	_____	_____
Property Damage ($):	_____	_____	_____

Known Off-Site Impacts (provide requested information):

Number of Deaths:	_____
Number of Hospitalizations:	_____
Number Receiving Other Medical Treatment:	_____
Number Evacuated:	_____
Number Sheltered-In-Place:	_____
Property Damage ($):	_____

Environmental Damage (Check any that apply):

☐ Fish or Animal Kills	☐ Soil Contamination.
☐ Tree, Lawn, Shrub, or Crop Damage	☐ None
☐ Water Contamination	☐ Other: _____

Notification of Off-Site Emergency Responders (Check which applies):

- ☐ Off-Site Responders Notified But Did Not Respond
- ☐ Off-Site Responders Notified and Responded
- ☐ Off-Site Responders Not Notified

Form II-1C: Incident Description

Location:

Circumstances Leading up to Incident:

Events and Actions as Incident Unfolded:

(Use additional pages if necessary)

Form II-1D: Incident Causes

Investigation Team's Assessment of Root Cause(s) of Incident:

Investigation Team's Assessment of Additional Contributing Causes:

Actions or Circumstances which Either Helped to Minimize the Effects of the Incident or which Could Have Minimized the Effects:

(Use additional pages if necessary)

Form II-1E: Team & Documents

Team Membership (List Team Leader First):

Name	Title	Company	Report Approval (Initial Below)

Location of Team's Working and Support Documents:

Form II-1G: Recommendations & Resolutions

Recommended Changes:

Rec. #	Recommendation	Status (In Progress or Complete)	Responsible Personnel	Estimated Completion Date	Actual Completion Date	Corrective Actions Taken	Initials
(Use additional pages if necessary)							

Form II-1G: Employee Reviews & Final Approval

Recommended Employee Reviews of Report:

Name	Title	Employee Signature*

*Employee's signature indicates he/she particpated in the review.

Date of Employee Review: _____

Final Approval:
Signatures below indicate approval of the Incident Investigation results, conclusions and recommendations.

Incident Investigation Team Leader:
Sign and date appropriate spaces.

Name:	Date:
Title:	
Signature:	

Resident Engineer:
Sign and date appropriate spaces.

Name:	Date:
Signature:	

General Manager:
Sign and date appropriate spaces.

Name:	Date:
Signature:	

Inland Star Distribution Centers, Inc.

Incident Investigation Log

Date	Incident No.	Incident Description

Incident Investigation Form Instructions

The following instructions can be used to complete the Incident Investigation (II) form.

Form II-1A (Incident Summary)

Investigation Number
The Team Leader checks the Incident Investigations Log and assigns an unused investigation number to the investigation form. This incident investigation number should be included at the upper right corner of each page of the form.

Tips: For example, you may wish to use the year the incident occurred in the incident investigation number, for example "2012-01" to indicate that this is the 1st incident investigation report in 2012.

Dates and Times
Insert the date and time of the incident and the date and time that the investigation commenced. The investigation is assumed to commence when all emergency response activities have been completed, the "all-clear signal" has been given, and incident investigation team members begin to gather information and/or tour the site to being the investigation.

Facility Information
Fill in facility name, address and five or six digit NAICS (North America Industrial Classification System) Code. Include the normal inventory (pounds) of regulated chemical stored on-site. This should agree with the inventory figure included in the Safety Information file and with that reported on the CalARP Registration Form.

Release Data
List the estimated quantity of the regulated chemicals released and the duration of the release. This should agree with the quantity reported to local, state and federal agencies. Attach release calculations if applicable.

Incident Type
Indicate the type of incident that occurred.

Primary Source of Release
Indicate the likely (if not confirmed) release source. If none of the choices are appropriate, check "other" and list the source. In those cases where a small release then resulted in an explosion or other catastrophe that caused a larger release, report the initial release source, not the second source.

Initiating Event
Indicate the primary initiating event which caused the release.

Incident Investigation Form Instructions

Cause(s) Contributing to Release
Indicate those causes that contributed to the incident or which should have mitigated results but didn't.

Types of Changes Recommended to Prevent Recurrence
Categorize the specific recommendations into the choices shown.

Form II-1B (Weather Conditions and Incident Impact)

The information on this form is used to document information which must be collected for the facility's five-year accident history.

Weather Conditions
Insert the wind speed, wind direction, temperature, stability class, and precipitation present (rain, snow, no precipitation, etc.) in the space provided or indicate that the weather conditions were unknown. Historical weather conditions can typically be found on the internet.

The atmospheric stability class should be recorded on the incident investigation form because it needs to be included in any incidents recorded as part of the facility's five-year accident history. Use the table below determine the stability classes based on the wind speeds, time of day, and cloud cover at the time of the incident. Alternatively you might be able to obtain the stability class from atmospheric data collected by a local meteorological station.

SURFACE WIND SPEED AT 10 METERS ABOVE GROUND		**DAY**			**NIGHT***	
Meters per Second	Miles per Hour	Incoming Solar Radiation			Thinly Overcast or ≥50% Cloud Cover	≤ 50% Cloud Cover
		Strong**	Moderate	Slight***		
<2	<4.5	A	A-B	B		
2-3	4.5-7	A-B	B	C	E	F
3-5	7-11	B	B-C	C	D	E
5-6	11-13	C	C-D	D	D	D
>6	>13	C	D	D	D	D

*Night refers to one hour before sunset to one hour before dawn.
** Sun high in the sky with no clouds.
*** Sun low in the sky with no clouds.

Known On-Site Impacts
Include the estimated total property and product damages if known. Include the number of on-site people injured and the number of fatalities directly linked to the incident caused by hazardous chemicals.

Known Off-Site Impacts
Include the number of off-site people injured and the number of fatalities directly linked to the incident caused by hazardous chemicals. Include estimates of the number of off-site people evacuated or sheltered-in-place and estimates of the off-site property damage.

Environmental Damage
Include the type of environmental damage which resulted.

Notification of Off-Site Emergency Responders
Indicate whether off-site emergency responders were notified and whether they responded.

Form II-1C (Incident Description)

Location
Describe the area where the incident occurred and descriptions of areas within the facility affected by the incident.

Circumstances Leading up to Incident
Briefly describe the operating conditions just prior to the incident including loads, pressures, weather, equipment status, etc. Note who was in charge and whether or not there were any abnormal circumstances or early indications of a problem.

Events and Actions as Incident Unfolded
Provide a chronology of events including who discovered the incident, how it was reported, how it was responded to, and how and when it was brought under control.

Form II-1D (Incident Causes)

Assessment of Root Cause(s)
Outline the Team's consensus view of the underlying cause(s) of the incident. If there are multiple hypotheses that cannot be ruled out they should also be included. This should be the condition or event which started the sequence of events which resulted in the near-miss or actual incident.

Assessment of Additional Contributing Causes
List conditions, actions, or events which contributed to the seriousness of the incident or which should have, but did not, mitigate the effects of the root cause(s).

Actions or Circumstances Which Helped
Outline any administrative or engineering controls which tended to mitigate the effects of the incident. Particularly in the case of a near-miss, this would explain why the incident was controlled. Also include things that might have been done to minimize the effects of the incident.

Incident Investigation Form Instructions

Form II-1E (Team & Documents)

Team Membership
Provide the name, title and business affiliation of the Team members. Upon completion of the Team's work they are to initial the report in the approval column if they agree that it accurately reflects the findings of the Team

Location(s) of Team's Working and Support Documents
Record the whereabouts of the file(s) containing memos, logs, notes, interviews, tapes, photos, drawings, etc. which were used by the Team to complete the investigation. The Team Leader should maintain the Team file. Individual members of the team should ensure that a copy of any important document, photo, etc. is in the Team file.

Form II-1F (Recommendations & Resolutions)

Recommended Changes
List a brief description of the requested changes. Note responsible party, estimated completion dates, status, corrective actions taken, and actual completion dates. Initial as recommendations are completed.

Form II-1G (Employee Reviews & Final Approval)

Recommended Employee Reviews
Team is to list individual affected employees by name or describe groups of employees by job, department, area, etc. that should be asked to attend review sessions to hear the results of the investigation, recommendations, and resolutions.

Final Approval
The Incident Investigation Team Leader should sign and date the incident investigation report indicating that they approve of the Incident Investigation results, conclusions and recommendations.

The incident investigation report should be maintained for at least five years.