EPA United States Environmental Protection Agency

Region 6 Compliance Assurance and Enforcement Division

INSPECTION REPORT

Inspection Date(s):	9/11-13/2017	
Media:	Clean Air Act	
Regulatory Program(s)	RMP	
Company Name:	**Woodward Iodine Corporation**	
Facility Name:	**Woodward Iodine Corporation**	
Facility Physical Location:	205865 East County Road 32	
(city, state, zip code)	Woodward, Oklahoma 73801	
Mailing address:	205865 East County Road 32	
(city, state, zip code)	Woodward, Oklahoma 73801	
County/Parish:	Woodward	
Facility Contact:	Terry Davis	Executive Vice President
	t_davis@cneconnect.com	
FRS Number:	110007386818	
Identification/Permit Number:	4015300017	
RMP:	1000054542	
NAICS:	32519	
SIC:	2819	

Personnel participating in inspection:

Terry K. Davis	Woodward Iodine Corporation	Executive Vice President	
Alvin Leroy Goodman	Woodward Iodine Corporation	President & CEO	
Greg Mitchell	Woodward Iodine Corporation	Vice President	
BJ Williams	Woodward Iodine Corporation	Administrative Manager	
Russell Compston	Woodward Iodine Corporation	Safety Manager	
Marie Stucky	EPA Region 6	Inspector	

EPA Lead Inspector Signature/Date	Marie Stucky	11/29/17 Date
Supervisor Signature/Date	Samuel Tates	11/29/2017 Date

Section I – INTRODUCTION

PURPOSE OF THE INSPECTION

I, EPA Region 6 inspector Marie Stucky, arrived at the Woodward Iodine Corporation (Woodward) around 1:30PM on September 11, 2017, for an announced inspection. I met with Terry K. Davis (Executive Vice President), Alvin Leroy Goodman (President & CEO), Greg Mitchell (Vice President), BJ Williams (Administrative Manager), and Russell Compston (Safety Manager). I presented my credentials and informed them that this was an EPA inspection to determine compliance with the Clean Air Act (CAA) Section 112(r) and the Chemical Accident Prevention Provisions at 40 CFR Part 68. The scope of the inspection was a partial compliance evaluation (PCE) and includes evaluation of the facility's compliance with CAA 112(r) and 40 CFR Part 68. On September 1, 2017, Woodward received an announcement email from me, which outlined the directions for conducting the inspection on September 11-13, 2017. The email also contained a list of documents for Woodward to gather for review during the inspection. Woodward is not a union facility.

FACILITY DESCRIPTION

Woodward Iodine Corporation operates an iodine manufacturing facility at 205865 East County Road 32 in Woodward, Oklahoma. Woodward began operations in September 1976 and was purchased in 1984 by the current owner. According to the facility's Risk Management Plan (RMP), the facility has 25 full time employees onsite and is covered by OSHA PSM and a Clean Air Act Title V Air Permit. Onsite, the facility has Sulfur Dioxide, Anhydrous Ammonia, and Chlorine, which are RMP covered chemicals over the threshold quantity.

Section II - OBSERVATIONS

On September 12, 2017, I was accompanied by Woodward staff on a walk-through of the facility to observe the covered process, equipment, and operations. The facility explained the iodine process from entering to leaving the facility. I also observed tanks, pipes, fire hoses, SCBA, and other safety equipment throughout the facility.

40 C.F.R. Part 68 – CHEMICAL ACCIDENT PREVENTION PROVISIONS

Subpart A – General

40 C.F.R. § 68.10 Applicability – I observed that Woodward is a stationary source that has an Air Operating Permit and more than a threshold quantity of a regulated substances in a process; therefore, these regulations are applicable. Woodward submitted a Risk Management Plan (RMP) that describes the process containing the toxic chemicals held at more than a threshold quantity. The process is Program three due to the fact that the facility is subject to OSHA's Process Safety Management Standard (29 CFR 1910.119), and is a chemical manufacturing NAICS Code 32519.

40 C.F.R. § 68.12 General requirements – I reviewed the RMP submitted by Woodward on December 15, 2015, that lists the toxic process, as detailed below.

Table 1: Woodward Risk Management Plan Chemicals over the Threshold Quantity

Process	Chemical Name	CAS Number
Iodine Manufacturing	Ammonia	7664-41-7
Iodine Manufacturing	Sulfur Dioxide	7446-09-5
Iodine Manufacturing	Chlorine	7782-50-5

40 C.F.R. § 68.15 Management – Woodward has developed a management system to oversee the implementation of the Risk Management Program elements. This system assigned qualified persons or positions overall responsibility for the development, implementation, and integration of the Risk Management Program elements.

Subpart B – Hazard Assessment

40 C.F.R. § 68.20 Applicability – Woodward prepared a worst-case release scenario analysis and completed the five-year accident history. Since Woodward has three Program 3 toxic chemicals, they must comply with the toxic sections in this subpart.

40 C.F.R. § 68.22 Offsite consequence analysis parameters – I observed that Woodward used parameters required in this part to calculate toxic worst-case and alternative release scenarios.

40 C.F.R. § 68.25 Worst-case release scenario analysis – I reviewed documentation and had discussions with Woodward during the inspection regarding the worst-case release scenario analysis. It showed that Woodward analyzed and reported a worst-case toxic releases in its RMP. This analysis was done using RMP Comp.

40 C.F.R. § 68.28 Alternative release scenario analysis – Woodward reported the alternate release scenarios for the toxic substances in their RMP. Documentation showing the reasoning for selecting the alternative release scenarios by the facility was not available at the time of the inspection.

40 C.F.R. § 68.30 Defining offsite impacts – Population – I spoke with Woodward about how the offsite consequences analysis was done. Woodward used Marplot/Cameo.

40 C.F.R. § 68.33 Defining offsite impacts – Environment – Marplot/Cameo Data was used to determine the environmental receptors and the distance to endpoints.

40 C.F.R. § 68.36 Review and update – I reviewed the documentation that illustrated reviews and updates regarding the offsite consequences were completed.

40 C.F.R. § 68.39 Documentation – I was provided documentation of the offsite consequence analyses including: a description of the vessel or pipeline, the substance selected as worst-case, the assumptions and parameters used (assumptions included use of any administrative controls and any passive mitigation that were assumed to limit the quantity that could be released), estimated quantity released, release rate, and duration of release for the worst case scenarios. The methodology used to determine distance to endpoints was documented by the facility. The data used to estimate population was provided in the form of US Geological Survey Maps that had the distance to endpoint labeled with a

circle from the emissions point. Documentation of the environmental receptors potentially affected by the worst case toxic release was also provided.
The alternative release scenarios included a description of the scenario and their assumptions and their effects. I requested the rationale of the selection of the alternative release scenario and the information as to why the specific alternative scenarios were selected. By the conclusion of the inspection, Woodward developed a document titled "Documentation – EPA Offsite Consequence" to provide additional specifics to explain the scenarios.

40 C.F.R. § 68.42 Five year accident history – Woodward had no reported accidental releases in their RMP as of December 15, 2016. I reviewed the National Response Center (NRC) and Incident Investigations for additional incidents that may have required addition to Woodward's five-year accident history. No incidents were determined to meet the five year accident history criteria.

Subpart D – Program 3 Prevention Program
40 C.F.R. § 68.65 Process safety information –During the inspection, I reviewed process safety information provided by Woodward, including process flow diagrams of the RMP process, safety data sheets, equipment files (including materials of construction and design basis), and maximum intended inventories. Additionally, I reviewed upper and lower limits, evaluation of consequences of deviation, and relief system design. At the time of the inspection, Woodward was unable to provide specifications for the Chlorine Tank Pressure Safety Valve (PSV) installed in July 2008. Woodward has purchased a replacement PSV in 2013, but the replacement has not been installed on the tank at present.

40 C.F.R. § 68.67 Process hazard analysis (PHA) – I requested and reviewed the PHAs for the RMP process. I reviewed the Iodine Manufacturing Process PHA with the recommendations. The team utilized What-if methodology, which was appropriate and had appropriate expertise and knowledge specific to the process being evaluated. The process hazard analyses findings did not show how they were completed, nor were they actively reviewed to complete promptly. At the time of the inspection when asked for the list of findings with the current status, a list was provided that did not provide details on when the specific recommendation was resolved and how it was resolved. As stated in the 2015 PHA, "12 recommendations from the 2010 PHA remain open and require resolution." Table 2 identifies each of the twelve 2010 PHA recommendations. Through discussion at the inspection, the Date Completed utilized by Woodward sometimes referenced that the recommendation had been completed by 12/31/16, not actually completed on that date. Specific information explaining how the recommendation was completed was not provided, nor was a management of change showing the details provided.

Table 2: 2010 Recommendations in the2015 PHA – Address PHA Findings Chart

Description	Recommendation	Date Completed	Status
Evaluate ITPM Program for Critical instrumentation	See EPTP	12/31/16	Completed
Evaluated current use of mouthbit respirators		12/31/16	Completed
Install PAL/FAL on P-201A (east spent acid tank) discharge line brine system	(2) check valve installed no need tof PAL/FAL	11/20/15	Completed
Include Cl2 and SO2 vaporizers in MI Program		12/31/16	Completed

SO2 tank overfill/compressor on supply truck	On delivery truck	11/20/15	Rejected
Install ventilation on T-523 to caustic scrubber system		9/12/17	Completed
Consider including in SOP procedures for responding to loss of DCS	Reboot the computer	12/31/16	Completed
Address vibration issues associated with NH3 Liquid unloading line		12/31/16	Completed
Provide remote operator shutoff valve for the flowing tanks; acid, caustic, & process liquor			Considering
Improve labeling process piping	ongoing	On-going	Completed
Provide residents with emergency action plan information	Contacted Residents by Phone (LEPC/WIC Coordinate in Time of Emerg.)		Completed
Provide waterflows alarms for all safety showers	All showers alarm except for 700 Bldg.		Considering

40 C.F.R. § 68.69 Operating procedures – I reviewed several operating procedures during the inspection including startup, normal operations, temporary operations, emergency shutdown, and normal shutdown. Woodward also provided the operating limits and safety and health considerations for the procedures. Documents were provided showing Operating Procedures Annual Certification Forms dated 1/9/2017, 2/8/2016, 1/7/2015, 1/2/2014, and 2/4/2013.

40 C.F.R. § 68.71 Training – I requested and was provided the training files for five individuals showing initial qualifications and training for the covered process. Woodward requires six weeks of training and a written test with a score above 60% in order to pass. Refresher training for all five individuals was also provided for each of the employees.

40 C.F.R. § 68.73 Mechanical integrity – I requested and was provided mechanical integrity records from Risk Management Program covered equipment and the written procedure for maintaining the integrity of the process. The mechanical integrity procedure references a Computerized Maintenance Management System (CMMS), which is "used to manage scheduling and recordkeeping for maintenance activities." Woodward was unable to provide CMMS showing this type of tracking of the fixed equipment but was able to provide the CMMS on the inspection and testing records for the instrumentation and detectors. Woodward conducted a Corrosion Monitoring and Visual Observation Report in June 2015 on the Sulfur Dioxide, Ammonia, and Chlorine systems. According to the reports, additional inspections were due on equipment in 2016 and 2017, which no records were available to show that replacement or inspection has been conducted since the June 2015 report. Additionally, records showing Appendix B from the "Mechanical Integrity Program Procedure" do not appear to have been completed on fixed equipment. Although some records were available to show some components

have been replaced over the years, these replacements could not be cross referenced to the equipment labeled in the Corrosion Monitoring and Visual Observation Reports from June 2015. No records on the PSV for the Chlorine Tank could be located. According to Woodward, the PSV was originally placed with the tank in 2008. A new PSV was purchased in 2013 but has not yet been installed. Finally, the Compliance Audit identified the need for an internal inspection of the Chlorine Tank. This has not occurred since it was installed in 2008.

40 C.F.R. § 68.75 Management of Change – I asked for and was given a few of the management of changes (MOCs) done at the facility and the written procedure for MOCs. I reviewed MOC documentation packages for changes occurring in the covered process. In two instances, items were not completed prior to implementing the change. Additionally, I identified instances showing updated P&IDs that did not have a corresponding MOC.

Table 3: MOCs

MOC #	Description	Observation
0315-01	Level permissive interlock to prevent chlorine from being added to an empty vessel	Training for MOC provided through note in logbook that is initialed by each operator. This documentation is dated after signed MOC affirms training complete. P&IDs 027 – Rev. 9 and 043 – Rev. 5 show update. Additional P&ID for 043 Rev. 6 does not have corresponding MOC.
0815-01	Add Low-Low Level interlock to 400 area absorber.	Training for MOC could not be provided. P&ID 04-10012_PID_024_D Rev. 8 shows update. P&ID Rev. 10 does not have a corresponding MOC.

40 C.F.R. § 68.77 Pre-startup review – Pre-startup review was included with the MOC documentation that I reviewed covering actions that require a change in process safety information. See observations in the Management of Change.

40 C.F.R. § 68.79 Compliance audits – I requested the last two Risk Management Program compliance audits. I was provided copies of audits that documented the review of all the elements of the Risk Management Program from October 2013 and September 2016. The October 2013 Compliance Audit shows the recommendations with the status but does not provide detail on how the recommendations were completed. I was provided the questions and recommendations made from the compliance audit from 2013, but it did not provide information on if and how the recommendations were completed. Additionally, findings in both 2013 and 2016 Compliance Audits have not been completed by Woodward.

40 C.F.R. § 68.81 Incident investigation – Prior to the inspection, I requested the incident investigations for the all incidents which resulted in, or could reasonably have resulted in, a catastrophic release of a

regulated substance over the last three years. I reviewed two incident investigations, 10/17/14 and 3/31/14 which included the required information.

40 C.F.R. § 68.83 Employee participation – I reviewed the employee participation plan during this inspection. The Employee participation plan provides that the "status of recommendations from PHA reports will be available upon request to the President/CEO" and "Status of recommendations from PSM/RMP Compliance Audits will be available upon request to the President/CEO". During the inspection, Woodward had to update the statuses on both, and was not keeping recommendations up to date.

40 C.F.R. § 68.85 Hot work permit – While onsite, I reviewed hot work permits. The hot work permits included date authorized for hot work and identified the object on which hot work was performed. In three instances, information was missing as described in Table 4.

Table 4: Hot Work Permits

Work Permit Number	Work Being Performed	Observation
3701	Welding	Time not listed for how long area was monitored following Hot Work
3716	Floor Replacement	Fire Watch period was signed off on, but no atmospheric monitoring information not written on work permit. Fire Watch provided by does not list name, although "N/A" is checked.
3718	Welding	Fire Watch period was signed off on, but no atmospheric monitoring information was not written on work permit. Fire Watch provided by does not list name, although "Yes" is checked.

40 C.F.R. § 68.87 Contractors – I observed that contractors and visitors go over the safety guidelines and discuss the topics listed. I discussed contractor selection and training requirements. Woodward utilizes a prequalification questionnaire and contractor safety checklist. Additionally, Woodward conducts contractor performance evaluations. I reviewed records of two contractors.

Subpart E – Emergency Response –

40 C.F.R. § 68.90 Applicability – Woodward employees are not first responders that respond to releases and emergencies onsite. Woodward has met with the Woodward Fire Department to review the Emergency Action Plan and works with the Local Emergency Planning Committee. Additionally, mechanisms are in place to notify the emergency responders when there is a need for a response.

40 C.F.R. § 68.195 Required corrections – The RMPs for this facility were submitted in 1999, 2005, 2010, and 2015. The most recent resubmission was December 15, 2015.

Section III – AREAS OF CONCERN

AOC 1: 40 C.F.R. 68.28(e) Alternative Release Scenario and 68.39(b) Documentation

40 C.F.R. § 68.28(e) states that *"The owner or operator shall consider the following in selecting the alternative release scenarios: (1) the five-year accident history provided in § 68.42 and (2) failure scenarios identified under § 68.50 or § 68.67" and 68.39(b) states "For alternative release scenarios... the rationale for the selection of the specific scenarios"*

In review of the alternative release scenarios, it was unclear as to the rationale in the selection of the alternative release scenarios (Documentation – EPA Offsite Consequence).

AOC 2: 40 C.F.R. 68.65(d)(2) Process Safety Information –

40 C.F.R. § 68.65(d) states that *"Information pertaining to the equipment in the process shall include: (i) Materials of construction"*

Records detailing the PSV originally placed with the chlorine tank in 2008 were not available at the time of the inspection. Woodward purchased a replacement PSV in 2013, but it has not yet been installed.

AOC 3: 40 C.F.R. 68.67(e) Process Hazard Analysis –

40 C.F.R. § 68.67(e) states that *"The owner or operator shall establish a system to promptly address the team's findings and recommendations."*

Twelve recommendations carried over from the 2010 PHA had not been addressed by Woodward as of the October 2015 PHA. Since that time, two recommendations are still listed as being "considered" (2015 PHA – Address PHA Findings).

AOC 3: 40 C.F.R. 68.67(g) Process Hazard Analysis –

40 C.F.R. § 68.67(g) states that *"The owner or operator shall retain process hazard analyses and updates or revalidations for each process covered by this section, as well as the documented resolution of recommendations described in paragraph (e) of this section for the life of the process."*

It is unclear from the spreadsheet provided by Woodward of the resolutions of recommendations what was done to complete the recommendation. May of the "recommendations and comments" fields were blank or only stated "completed" and did not explain how Woodward resolved the recommendation (2015 PHA – Address PHA Findings).

AOC 4: 40 C.F.R. 68.73(b) Mechanical Integrity –

40 C.F.R. § 68.73(b) states that *"The owner or operator shall establish and implement written procedures to maintain the ongoing integrity of process equipment.*

According to the Mechanical Integrity Program "CMMSs will be used to track inspection, testing, preventive maintenance and repair history of all critical equipment. The CMMSs currently in use at WOC is Fluke (used for instrumentation and relief devices. Excel® is used to manage ITPM activities of other process equipment (see Appendix B)." At the time of the inspection, Woodward was unable to show how it was utilizing a CMMS to track the inspection, testing, preventive maintenance and repair history of the fixed equipment that was inspected in June 2015 (Corrosion Monitoring & Visual Observation Reports).

AOC 4: 40 C.F.R. 68.73(d)(3) Mechanical Integrity –

40 C.F.R. § 68.67(d)(3) states that *"The frequency of inspections and tests of process equipment shall be consistent with applicable manufacturers' recommendations and good engineering practices, and more frequently if determined to be necessary by prior operating experience."*

According to the Corrosion Monitoring & Visual Observation Reports, Woodward has multiple inspections overdue for their next inspection (Corrosion Monitoring & Visual Observation Reports). Additionally, the Chlorine Tank is overdue for internal inspection and the PSV is overdue for replacement/inspection (Mechanical Integrity Program Procedure).

AOC 5: 40 C.F.R. 68.75(a) & (c) Management of Change –

40 C.F.R. § 68.75(a) states that *"The owner or operator shall establish and implement written procedures to manage changes to process chemicals, technology, equipment, and procedures" and (c) states "Employees involved in operating a process... shall be informed of, and trained in, the change prior to startup of the process or affected part of the process."*

In two instances observed during the inspection, Woodward has P&IDs that change the equipment that do not have corresponding MOCs (P&ID – 04-10012-PID-024-D – Rev. 10 and P&ID – 04-10012-PID-043-D – Rev. 6). Additionally, Woodward was unable to show training was conducted for the MOC 0815-01 prior to the change (Management of Change – 0815-01).

AOC 7: 40 C.F.R. 68.79(d) Compliance Audit –

40 C.F.R. § 68.75(a) states that *"The owner or operator shall promptly determine and document an appropriate response to each of the findings of the compliance audit, and document that deficiencies have been corrected."*

Woodward did not promptly determine and document the response to the findings in the compliance audits from 2013 and 2016 (2016 – Address PSM Findings).

AOC 8: 40 C.F.R. 68.85(b) Hot Work Permits –

40 C.F.R. § 68.83(c) states that the hot work permit "shall document the fire prevention and protection requirements in 20 CFR 1910.252(a)..."

Three hot work permits reviewed during the inspection did not include all of the required information (Hot Work Permits – 3701, 3716, and 3718).

Section V – LIST OF APPENDICES

1. Employee Participation Plan Procedure
2. Mechanical Integrity Program Procedure
3. Management of Change Procedure
4. PSM Compliance Audit – October 2013
5. PSM Compliance Audit – September 2016
6. PSM Questions and Recommendations
7. 2016 – Address PSM Findings
8. Process Hazard Analysis – October 2015
9. 2015 PHA – Address PHA Findings
10. Documentation – EPA Offsite Consequence
11. Management of Change – 0315-01
12. Management of Change – 0815-01
13. P&ID – 04-10012-PID-024-D – Rev. 10
14. P&ID – 04-10012-PID-043-D – Rev. 6
15. Hot Work Permit – 3701
16. Hot Work Permit – 3716
17. Hot Work Permit – 3718
18. Corrosion Monitoring & Visual Observation Report – Sulfur Dioxide – June 2015
19. Corrosion Monitoring & Visual Observation Report – Chlorine System – June 2015
20. Corrosion Monitoring & Visual Observation Report – Ammonia System – June 2015