CHECKLIST

NESHAPS INSPECTION FOR VINYL CHLORIDE EMISSIONS COMPLIANCE

Inspection Date April 9, 1984

Inspector's Name Syed Moinuddin

GENERAL

1.* Firm's name Tenneco Polymers, Inc. Account No. HG 0713 S

2.* Firm's address P.O. Box 849 Pasadena, Texas 77501

3.* Process designation/product identification (check one or more):

EDC: ☐ oxychlorination ☐ balanced ☐ N.A.

VCM: ☐ hydrochlorination, ☐ dehydrochlorination ☐ N.A.

PVC: ☒ suspension ☐ dispersion ☐ latex ☐ N.A.

☐ bulk ☐ solution ☐ copolymer _____.

4. Rated and average annual reactor/cracking capacity

EDC: Design* _____; Normal Max.* _____; Actual _____.

VCM: Design* _____; Normal Max.* _____; Actual _____.

PVC: Design* 750 mm lbs/yr; Normal Max.* 750mm lbs/yr Actual 581 mm lbs/yr

LEAK DETECTION MONITORING SYSTEM

5.* Permanent leak detection monitoring system [61.65(8)(i)]

a) Total number of points monitored: 90.

b) Number of measuring instruments: 6; Type(s) Arcas.

c) Time interval to cycle all points: 15 minutes.

d) Definition of a Leak: 25 PPM two leaks in a row.

e) Lower detection limit (LDL) of instrument Less than 1 PPM.

f) Measurement sequence: ☒ unchanging ☐ program controlled

g) Data reduction (check one or more)

☐ none ☒ hourly ☒ shift ☒ daily ☒ weekly ☒ monthly

☐ other (specify) _____.

* Data may be available from records on file at EPA Regional Offices.

6. Calibration of leak detection monitoring system [61.65(8)(iii)]:

a) List instruments and data from monitor points which were tested for calibration. (Attach sheets if more space is required.)

Date & Time	Location in Plant	Instrum. Iden.	Cal. VCM Concen.	Instrum. VCM Concen.	Percent Deviation	Action Required
Every day	Several	Arcas A Arcas B Arcas C	5 to 250PPM	5 to 25 PPM		

b) Calibration method used (check one or more)

- ☐ None
- ☒ Paragraph 61.65(8)(iii)(A) - Test Method 106 - 5.2.1, 5.2.3
- ☐ Paragraph 61.65(8)(iii)(B)
- ☐ Other _____

STACK EMISSION MONITORING SYSTEM

7.* Emission (i.e., stack) monitoring system

a) List emission (i.e., stack) sources

Location in Plant	Ducted Processes	Continuous or Sampling, Other	Number of Monitoring Points
Incinerator	All emissions VCM Vents and waste gases	Continuous	one

b) Lower Detection Limit (LDL) of instrument Less than 1 PPM

8. Calbration of emission monitoring system:

a) List instruments and data from monitor points which were tested for calibration.

Date & Time	Location in Plant	Instrum. Iden.	Cal. VCM Concen.	Instrum. VCM Concen.	Percent Deviation	Action Required

PORTABLE INSTRUMENT

9. Calibration of portable hydrocarbon detector(s):

a) List instrument(s) which were tested for calibration

There are 4 portable monitors. They are calibrated on a ~~regular basis~~.

Date & Time	Location in Plant	Instrum. Iden.	Cal. VCM Concen.	Instrum. VCM Concen.	Percent Deviation	Action Required

b) Calibration method used (check one or more)

- ☐ None
- ☑ Paragraph 61.65(7)(iii)(A) - Test Method 106-5.2.1, 5.2.3
- ☐ Paragraph 61.65(7)(iii)(B)
- ☐ Other _____

LEAK DETECTION AND ELIMINATION

10.* Leak detection and elimination process [61.65(8)]

a) What is the frequency of the "Leak Detection Patrol"? daily.

b) Check typical points and equipment which are required to be routinely checked for leaks by the "Leak Detection Patrol" in the following:

- [x] reactor
- [ ] cracking furnace
- [x] stripper
- [ ] EDC purification
- [x] recovery system
- [x] mixing
- [x] weighing
- [x] holding tank
- [x] separation tank
- [x] blending tank
- [x] storage - raw
- [x] storage - finished
- [x] storage - heavy
- [x] storage - water
- [x] light ends col.
- [x] heavy ends col.
- [x] wastewater col..
- [x] water wash col.
- [x] water quench col.
- [x] wash water stripper
- [x] dryer
- [x] condensers
- [x] RD/SRV
- [x] control devices
- [x] pumps
- [x] compressors
- [x] agitator(s)
- [x] loading
- [x] unloading
- [x] flanges
- [x] valves
- [x] filter strainers
- [x] centrifuges
- [x] holding bins
- [x] silos

- [ ] Others: _____

c) What is the average elasped time between the determination of a leak by personnel of the "Leak Detection Patrol" and the plant's personnel taking corrective action for the purpose of eliminating the leak?

Small leaks: As early as possible.
Large leaks: _____.

d) What is the average elapsed time between the monitoring system alarm becoming activated and the plant's personnel taking corrective action for the purpose of eliminating the leak?

Small leaks: As early as possible.
Large leaks: _____.

DISCHARGES TO THE ATMOSPHERE

11. List any SRV's which do not use RD's or vent to recovery system or to gas hold tank. None

Location in Plant	Comments

12. If a pressure gage is located between rupture disc (RD) and safety relief valve (SRV), list points in the plant where the gage indicates a higher than normal pressure, typically 0 to 5 psig. (Note: While in common use in plants, a pressure gage between RD and SRV is not a requirement of the Standard.) Identify those RD/SRV points which are in PVC plants by check (✓) in column 3.

RD/SRV Identification	Location In Plant	PVC Service	Inspector's Comments
None			

13* List vents, other than emergency types, which are vented to the atmosphere and not connected to a recovery system, and which are suspected of having had short and/or long periods of emissions exceeding the limits specified in Sections 61.62, 61.63, 61.64 and 61.65.

Vent Identification	Location In Plant	Location of Nearest Monitoring Point(s)
Two Storage Tanks	Storage	yes
Two reactors	Reaction	yes

FUGITIVE EMISSIONS

14. Investigate and witness the plant's standard operating procedure [61.65(c)] for fugitive emission sources [61.65(b)(1), (b)(2), (b)(5), (b)(6) and (b)(7)] and list any possible deficiencies.

Pertinent Fugitive Emission Source	Location In Plant	Possible Deficiency
Same as leak detection system		

15. Are plant personnel following the establ·shed standar· operating procedures?

☒ Yes ☐ No

16. If the response to the above is "NO", list pertinent fugitive emission source, location in plant and action required where the established standard operating procedure is not being followed.

Pertinent Fugitive Emission Source	Location In Plant	Action Required

17* List equipment, location in plant, identification in the process of any pump, compressor and agitator which is not equipped as seal-less or with a double mechanical seal or double outboard seal, and does not duct emissions through a control system, or maintain proper pressurization between seals or equivalent. None

Equipment	Location In Plant	Identification In Process	Inspector's Comments

18.* Incoming raw material received by: Shell is the supplier

☒ Pipeline ☐ Truck ☒ Rail ☐ Barge

19.* Finished product material shipped by:

☐ Pipeline ☒ Truck ☒ Rail ☐ Barge

REACTORS AND FURNACES

20.* Give the number of reactors for each capacity.

EDC: Capacity _____ Number _____

_____ _____

_____ _____

PVC: Capacity 35000 Gallons Number 10 Reactors

_____ _____

_____ _____

VCM (Hydrochlorination):

Capacity _____ Number _____

_____ _____

_____ _____

21.* Give the number of cracking furnaces. Not applicable

VCM(dehydrochlorination): Capacity _____ Number _____.

_____ _____.

CONTROL DEVICES

22.* List control devices, location in plant, major entering streams, major exiting streams, vent location.

Control Device	Location In Plant	Major Entering Streams	Major Exiting Streams	Vent Location
Two incinerators	South end	Nitrogen sweep system, VCM rec. compressors	Incinerator stack	South end, near flar .

STACK EMISSIONS

23. List plant's performance specifications of stack emission continuous monitoring instrumentation:

    a) Stack identification The results have been approved by EPA.

    b) Mean value, _____, calculated from a series of absolute measurements made by using the equipment specifications and procedure of reference Test Method 106 (see APPENDIX A);

    c) Number of measurements used to calculate the mean value_____;

    d) Accuracy, _____ percent of the mean value;

    e) Calibration error, _____ percent of each calibration gas mixture value;

    f) Zero drift (2 hr.), _____ percent of calibration span;

    g) Zero drift (24 hr.), _____ percent of calibration span;

    h) Calibration drift (2 hr.), _____ percent of calibration span;

    i) Calibration drift (24 hr.), _____ percent of calibration span;

    j) Response time, _____ (Time required from the insertion of a known vinyl chloride concentration gas sample into the stack and the stack instrument indicating a value 95% of the known vinyl chloride concentration).

24. If more than one stack was tested, and if the other test data were significantly different from the above data, use attach sheets to provide the information obtained from other stack tests.

N/A

25. Were the stack emission tests made under conditions of maximum production rate?

☐ Yes ☐ No N/A

If the response is No, give the percent of maximum production rate under which the stack emission tests were made:_____ percent.

26. Were all stack samples analyzed within 24 hours? ☐ Yes ☐ No

If the response is No, give elapsed time, to the nearest hour, from taking sample to its being analyzed:_____ hours.

N/A

27.* List deviations or substitutes from reference Test Method 106 equipments materials and procedures which are required in conducting the stack emission test.

N/A

Equipment/Materials/Procedure Identification	Deviation or Substitutes From Test Method 106	Inspector's Comments

INPROCESS WASTEWATER

28. Identify any inprocess wastewater stream and location in plant which is mixed with another water stream prior to the reduction of vinyl chloride concentration to 10 ppm or less.

None

Inprocess Wastewater Stream Identification	Location In Plant	Identification of Process Step	Inspector's Comments

REACTOR OPENING LOSS

29. Briefly describe the plant's procedure to determine the emission due to opening the reactor.

VCM vapors are removed by heating and vacuuming. They make as much as fifty batches in each reactor before opening. Three samples are being analyzed for VCM per opening.

ON REVIEW OF RECORDS

NESHAPS INSPECTION FOR VINYL CHLORIDE EMISSIONS COMPLIANCE

Review Date 04/09/84

Reviewer's Name Syed Moinuddin

Firm's Name Tenneco Polymers, Inc.

Firm's Address P.O. Box 849 Pasadena, Texas 77501

EMISSION (STACK) Please see Tenneco's semi-annual reports of March 12, 84 and September 14, 83.

1. Review of hourly ☐yes ☐no average from continuous stack emission.

2*. Number of stack emissions (continuous emissions for 1 hour or more) which exceeded limits specified in Sections 61.62, 61.63 and 61.64:

3. Were there additional emissions which were not properly and accurately reported in the appropriate Semi-annual Report?

☐ Yes ☒ No

4. If the response to No. 3 is Yes, list date, time, emission point location, duration, estimated integrated emission, and the cause or causes of emission. (Attach sheets if more space is required.)

Date & Time	Location In Plant	Duration	Est. Integrated Emission	Cause or Causes	Action Taken

LEAK DETECTION SYSTEM

5. Review of (check one or more) ☐hourly ☐shift ☒daily ☐weekly ☐monthly average from leak detection system.

* Data may be available from records on file at EPA Regional Offices.

6. Number of times one or more monitoring points indicated emission levels exceeded the value for the leak definition (See CHECKLIST 5 (d):

_____

7. List date, time, monitoring point location, duration, estimated integrated emission and the cause or causes of emission of those leaks in No. 6. (Attach sheets if more space is required.)

Date & Time	Location In Plant	Duration	Est. Integrated Emission	Cause or Causes	Action Taken
1-23-84	E-309	Un known	125 PPM	Orifice fitting	Fixed
2-13-84	K-301D	Unknown	100 PPM	Thermal weld Threads	Tightend
3-14-84	C-306	''''	200 PPM	Liquid leg	replaced
3-30-84	C-307	'' ''	120 PPM	Orifice blind	replaced
4-03-84	C-343	"" ""	150 PPM	Flex speel cracked	replaced

ATMOSPHERIC DISCHARGES

8* List information of emergency discharges to the atmosphere. None

Date & Time	Location in Plant	Duration	Est. Integrated Emission	Cause or Causes	Inspector's Comments

9. Determine from plant records whether temperature, pressure, flow rate(s) and/or other process variables and/or if equipment failures (i.e., reduced flow rate of cooling water, defective temperature controller, etc.) gave rise to the necessity of the emergency discharge(s) from PVC reactors. List the date, time, location in plant and the condition(s) which appear to have produced the need for an emergency discharge(s).

None

Date & Time	Location In Plant	Conditions

10. List the dates and time when similar or equivalent conditions existed as in No. 12 and for which an emergency discharge was not reported.

None

Date & Time	Location In Plant	Conditions

11. Review the leak detection records of those monitoring points nearest the location(s) and down stream in No. 13 on those dates and times where conditions existed which appear to give rise to the necessity of emergency discharge. List date, time, location in plant and the emission levels of the nearest monitoring points.

None

Date & Time	Location In Plant	Emission Level of Monitoring Points			

12. List the date, time, location in plant from the tabulation in No. 14 where the owner/operator appears not to be in compliance with the NESHAPS vinyl chloride standard and its amendments.

None

Date & Time	Location In Plant	Inspector's Comments

REACTOR OPENING LOSS

13* Review analytical records of vinyl chloride concentration in reactor vapor space to determine "reactor opening loss" of reactor (and stripper where applicable), prepolymerization and post polymerization vessels. List date, vessel identification, and batch identification where emissions exceeded standard.

Date	Vessel Identification	Batch Identification	Inspector's Comments
For details please see Tenneco's semi-annual report of September 14, 1983 and March 12, 1984.			

RESIN, SLURRY, WET CAKE AND LATEX SAMPLING

14* Review analytical records of vinyl chloride concentration in polyvinyl chloride resin, slurry, wet cake and latex to determine the weighed average residual vinyl chloride concentration in all grades of polyvinyl chloride resin processed through the stripping operation on each calendar day. List date, vessel identification, and batch identification where emissions exceeded standard.

None

Date	Vessel Identification	Batch Identification	Inspector's Comments

RECORDKEEPING

15. Review and assess the recordkeeping as required in the standard in the listing below, and comment on each with respect to completeness, form and ease of reference.

Record	Inspector's Comments
Stack emission monitoring	In compliance
Leak detection monitoring	In compliance
Leaks detected by "Leak Detection Patrol"	In compliance
Stack emission tests	Not required
Reactor opening emissions	8 excursions from Sept. 1, 83 thru February 29, 1984
Inprocess waste water emissions	In compliance
Resin, slurry, wet cake and latex emissions	In compliance