

North Carolina
Department of Environment and Natural Resources
Division of Air Quality
Chemical Accident Prevention Program

End of Year Report for US EPA Federal Fiscal Year 2013

Introduction:

This annual report is a summary of activities of the North Carolina Chemical Accident Prevention Program for the United States Environmental Protection Agency's ("EPA") Federal Fiscal Year ("FFY") 2013 (October 1, 2012 - September 30, 2013) and work plan for FFY 2014. This report is required by the 2013 Air Planning Agreement and addresses 105 Grant Commitment Item #8 titled "Implement the CAA section 112(r) program for affected sources."

Background:

40 CFR Part 68 Chemical Accident Prevention Provisions is a federal regulation that has been incorporated into the North Carolina Division of Air Quality ("DAQ") rules under 15A NCAC 2D. 2100, "Risk Management Program" to meet the requirements of 42 U.S.C. §7412(r): "Prevention of Accidental Releases". DAQ has been delegated implementation and enforcement authority for this regulation by the EPA.

Program Implementation:

The primary mission of the North Carolina Chemical Accident Prevention Program is to promote accidental chemical release prevention measures and reduce the impact of releases on the environment and public health through safety programs, emergency preparedness, and public access to information. In order to achieve this goal, the following objectives have been established:

- 1) **Strategic Planning:** To coordinate chemical accident prevention activities with existing health and safety programs.
 - a) **Memorandum of Agreements ("MOA"):** Agreements continue with partner agencies including the Divisions of Water Quality ("DWQ"), Environmental Health ("DEH"), and Division of Emergency Management ("DEM") and the NC Occupational Safety and Health ("OSHNC"), , and Department of Agriculture ("NCDA&CS").
 - b) **112(r) Task Force:** In order to promote consistency among DAQ and its partner agencies, an internal work group continues to meet quarterly. For this reporting cycle Task Force meetings were held on October 10, 2012, January 10, 2013, April 11, 2013 and July 11, 2013.

- 2) **Compliance Assistance:** To offer technical assistance to the regulated community, emergency response community, and interested members of the public.
 - a) **Technical Assistance:** Continue to offer technical assistance through telephonic communication, email correspondence, and through a web portal.

- b) **Risk Management Plan (“RMP”) Screening:** By utilizing either EPA’s Central Data Exchange or EPA provided compact discs, the RMP database is screened on a monthly basis for reporting inconsistencies including, but not limited to, failure to update accident histories, failure to update plans at least once every five years, and other updates and corrections as required by §68.190 and §68.195. For this reporting cycle:
 - i) *§68.190 Updates:* 26 facilities were identified that were due to update their RMP within the FFY 2013. Of those, all were contacted and advised of their pending update requirements.
 - ii) *§68.195 Required corrections:* No RMPs were required to submit corrections throughout the reporting cycle.
- c) **Emergency Response Coordination:** Promote awareness of the program to interested partners including local emergency planning committees (“LEPCs”) and other emergency response conferences, associations, etc. For this reporting cycle:
 - i) *LEPCs:* Program awareness presentations presented to 4 LEPCs: Richmond County (January 9, 2013), Wake County (January 17, 2013), Cumberland County (January 31, 2013), and Lincoln County (February 22, 2013);
 - ii) *State Emergency Response Commission (“SERC”):* Provided program updates to quarterly meetings (October 18, 2012, January 18, 2013, April 26, 2013, and July 19, 2013); and
 - iii) *Associations/conferences:* Provided EPCRA/RMP awareness training to the North Carolina Emergency Management Association Conference the week of March 11, 2013.
- 3) **Regulatory Review and Enforcement:** To promote effective chemical safety management programs through technical review of risk management programs.
 - a) **Air Permitted Facility Inspections:** In Title V of the CAA, section 502(b)(5)(A), Congress says that a permitting authority must have the authority to “assure compliance by all sources required to have a permit under this title with each applicable standard, regulation or requirement under this act.” 40 CFR part 68 is an “applicable requirement”. The requirements for a permitting authority related to part 68 are set out in §68.215. In general, the permitting authority must ensure that permits include conditions relative to part 68 compliance and must ensure that the RMP is submitted and complete. For this reporting cycle:
 - i) *Title V facilities:* Three hundred one (308) major facilities were inspected;
 - ii) *Synthetic minor facilities:* Six hundred thirty seven (648) facilities were inspected; and
 - iii) *Minor facilities:* One thousand three hundred twenty eight (1257) small facilities were inspected.
 - b) **RMP Inspections:** In order to evaluate compliance with 40 CFR Part 68, subject facilities are scheduled for routine inspection of their risk management programs. Inspections consist of a records review of all program elements, employee interviews, and on-site inspection of regulated processes.

EPA established a national compliance monitoring goal, to inspect at least 5% of the total number of regulated facilities of which 25% of those inspections to take place at “high risk” facilities. In order to meet or exceed this goal, DAQ planned to inspect at least 20% of the total number of regulated facilities per year. Also, to either ensure that 20% of those inspections occur at “high risk” facilities or ensure that all “high risk” facilities are inspected at least once every five years. For this reporting cycle:

- i) *Total inspections*: Of the two hundred twenty four (224) facilities under the jurisdiction of the program, forty five (45) facilities were scheduled for inspection. Of those scheduled, thirty nine (39) facilities were inspected for a 17% inspection rate (see **Figure 1**).
- ii) *High Risk facility inspections*: Of the twenty two (22) RMP facilities designated as “High Risk”, four (4) were scheduled for inspection. Of those, all were inspected plus a fifth (5) for a 23% inspection rate (see **Figure 1**).

RMP Inspections for FFY 2012						"High Risk" Facility for FFY 2012					
	RMP Facilities	20% Insp. Goal	Facilities Inspected	Percent Completed	Inspections left		RMP Facilities	20% Insp. Goal	Facilities Inspected	Percent Completed	Inspections left
DAQ	172	34	38	22%	-4	DAQ	22	4	5	23%	-1
DEH	34	7	0	0%	7	DEH	0	0	N/A	N/A	N/A
DWQ	16	3	1	6%	2	DWQ	0	0	N/A	N/A	N/A
NCDA	2	0	0	0%	0	NCDA	0	0	N/A	N/A	N/A
Total	224	45	39	17%	6	Total	22	4	5	23%	-1

Figure 1: Inspection goals for FFY 2013.

- c) Incident Investigations: Investigations into accidental chemical releases are initiated by DAQ whenever initial reports appear to involve or have the potential to involve a catastrophic release of a regulated substance at fixed facilities. Investigations typically involve a determination of the cause of the incident as well as compliance with 40 CFR Part 68. For this reporting cycle, twelve (12) unique accidental chemical releases involved regulated substances were identified (See **Figure 2**). Of those, none resulted in documented impacts such as on-site fatalities, injuries, or significant property damage or off-site impacts. Of the 12 incidents:
 - i) *General Duty facilities*: Three (3) incidents were determined to have occurred at facilities with less than threshold quantities of the regulated substance and therefore subject to the general duty clause. Since none of the reported releases appeared to meet the definition of a “catastrophic release,” these releases were not investigated further.
 - ii) *RMP Facilities*: Nine (9) incidents meet the definition of an “accidental release” from a “stationary source”. Of those accidents identified, all were registered RMP facilities. Since none of the reported incidents appeared to meet the definition of a “catastrophic release”, investigations were limited to ensuring that facility representatives met their obligations to investigate the incident and to take corrective actions to prevent reoccurrence as required by §68.60 or §68.81.

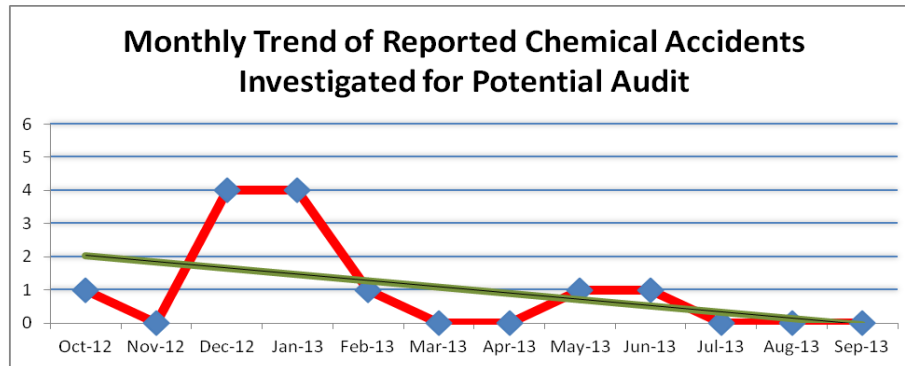


Figure 2: Rate of recorded accidents by month.

- d) **Enforcement Actions:** By utilizing the compliance tools mentioned above, regulated facilities may be assessed civil penalties when violations of 15A NCAC 2D .2100 occur. For this reporting cycle:
- i) *Notice of Deficiency (“NODs”)*: Three (3) NODs were issued. NODs represent minor violations resulting in little or no harm to the environment or public health;
 - ii) *Notice of Violation (“NOVs”)*: Two (2) NOVs were issued. NOVs represent more serious violations where there is documented moderate to severe potential for harm to the environment or public health; and
 - iii) *Notice of Recommendation for Enforcement (“NOV/NRE”)*: One (1) NOV/NRE was issued. NOV/NREs represent significant or high potential for environmental or public health harm.
- 4) **Emergency Planning and Prevention:** To integrate program goals and objectives, key performance measures, and key benefits into a statewide chemical hazards mitigation strategy:
- a) **Regional Hazmat Studies:** The purpose of these studies is to provide a cyclical process of analyzing community vulnerabilities to chemical hazards both on a local level and state-wide level. The results are used to support LEPCs and the SERC to be better positioned to make informed decisions to address or reassess identified vulnerabilities. In order to focus resources, the study areas were separated into regions known as Domestic Preparedness Regions (“DPRs”).
- For this reporting cycle, the assessment focused on DPRs 5 and 7 which consist of twenty one (21) counties across the central section of the state. Objectives of the study included the following:
- i) *Facilities:* Identify, map, and classify facilities that store large quantities of hazardous materials based on RMP, Tier II, and Toxic Release Inventory data;
 - ii) *Threat Zones:* Anticipate areas of potential impact including those populations possibly affected by accidental chemical releases into the atmosphere;
 - iii) *Transportation corridors:* Identify major hazardous material transportation routes and corridors into and out of identified facilities;

- iv) *Emergency response planning*: Review and recommend consistency in LEPC’s emergency operation plans including updating contact information, identifying local response capabilities, establishing notification procedures, and prioritizing training and exercise needs; and
 - v) *Mitigation*: Support the State of North Carolina Technological Hazard Mitigation Plan by identify tangible mitigation options resulting in cost effective decisions that reduce or eliminate chemical hazards were possible.
- b) **NC Threat and Hazards Identification and Risk Assessment (“THIRA”)**: Utilized the information collected through the Regional Hazmat Studies to incorporate the chemical hazard mitigation plan into a comprehensive community based threat and risk assessment strategy.
- 5) **RMP Trends Analysis**: In order to assess effectiveness, a set of performance indicators is used to evaluate success. These indicators include measuring reductions in community vulnerabilities, reductions in the number of facilities, and impacts from associated chemical accidents. For this reporting cycle:
- a) **Modeling**: Using offsite consequence analysis (OCA) data, an assessment of possible offsite impacts for 2012 revealed a decrease in the total population within these hazard zones by approximately twenty nine thousand (29,409) residents or -1.01%. Over the last ten years, the overall trend is down by approximately one million sixty seven thousand (1,067,881) residents or -24.46%. Using population estimates from the U.S. Census Bureau, the population within North Carolina over the same ten year time frame is estimated to have increased by approximately one million three hundred forty two thousand (1,342,413) or 14.94% (See Figure 3).

Change in NC Population within OCA(s)						
Year	NC Census	% Change in NC Population	Population within Hazard Zones	% Change in Population within OCA	Population within Toxic OCA	Population Within Flammable OCA
2003	8,409,660	-----	3,936,082	-----	3,930,303	5,779
2004	8,523,199	1.35%	4,869,952	23.73%	4,865,225	4,727
2005	8,661,061	1.62%	4,819,301	-1.04%	4,814,306	4,995
2006	8,845,343	2.13%	4,865,795	0.96%	4,860,262	5,533
2007	9,041,594	2.22%	3,980,524	-18.19%	3,975,014	5,510
2008	9,222,414	2.00%	3,769,569	-5.30%	3,763,943	5,626
2009	9,380,884	1.72%	2,966,424	-21.31%	2,961,232	5,192
2010	9,535,483	1.65%	2,959,864	-0.22%	2,954,307	5,557
2011	9,656,401	1.27%	2,898,373	-2.08%	2,891,747	6,626
2012	9,752,073	0.99%	2,868,964	-1.01%	2,862,422	6,542
* Total Change:	1,342,413	14.94%	-1,067,118	-24.46%	-1,067,881	763

* Note: 2003 was used as reference year.

Figure 3: At risk population change within OCAs. Note: in order to limit results to one decade, 2003 used as the reference year.

- b) Facilities: An assessment of the number of regulated facilities reported to have current RMPs in North Carolina decreased by nine (9) facilities and nine (9) regulated processes from the previous year. Over the last ten years, the overall trend of facilities is down by fifty two (52) facilities or -18.4% and by seventy five (75) regulated processes or -21.5%. During the same ten year time period, the total quantity of regulated substances reported in RMPs continues to show an increased trend in total quantities by approximately ninety million six hundred thousand pounds (90,639,779 lbs) or an increase of 149.1%. It's important to note that the total quantity of regulated substances on the "Toxics" list appear to be relatively unchanged over the course of the last ten years while the regulated substances on the "Flammable" list has increased by approximately 5 fold (**See Figure 4**). This increase in flammable substances is mostly attributed to an increase in the bulk storage of flammable fuels such as propane and butane.

RMP Regulated Facility Data								
Year	Facilities	% change in facilities	Processes	% change in processes	Total Quantity of EHS (lbs)	% change in Regulated Substances	Toxic EHS (lbs)	Flammable EHS (lbs)
2003	301	-----	380	-----	53,043,496	-----	36,082,728	16,960,768
2004	286	-5.0%	357	-6.1%	60,999,021	15.0%	44,462,210	16,536,811
2005	275	-3.8%	347	-2.8%	61,106,906	0.2%	44,072,935	17,033,971
2006	282	2.5%	348	0.3%	55,765,984	-8.7%	43,903,288	11,862,696
2007	280	-0.7%	343	-1.4%	128,626,426	130.7%	41,883,026	86,743,400
2008	279	-0.4%	342	-0.3%	131,537,988	2.3%	41,966,608	89,571,380
2009	263	-5.7%	322	-5.8%	126,013,917	-4.2%	37,885,155	88,128,762
2010	262	-0.4%	319	-0.9%	125,688,294	-0.3%	37,698,623	87,989,671
2011	258	-1.5%	314	-1.6%	142,078,062	13.0%	38,499,105	103,578,957
2012	249	-3.5%	305	-2.9%	143,683,275	1.1%	40,604,318	103,078,957
Total Change	-52	-18.5%	-75	-21.5%	90,639,779	149.1%	4,521,590	86,118,189

* Note: 2003 was used as reference year.

Figure 4: Change in total regulated facilities by year for last ten years.

Note: in order to limit results to one decade, 2003 used as the reference year.

- c) Accidental Releases: An assessment of chemical accident history data reported in the RMP* eSubmit program revealed that there were 2 reported significant releases in 2012. These releases resulted in 9 employee injuries (**See Figure 5**). Both releases involved anhydrous ammonia used as a refrigerant within animal slaughtering operations. Also, both facility investigations cited human error as the cause of the release.

Year	Accidents	Fatalities	Injuries	Evacuations /SIP	Property Damage
2003	1	0	0	0	\$0
2004	6	0	24	100	\$203,000
2005	7	0	4	2	\$3,201
2006	9	0	5	0	\$6,000
2007	5	0	2	0	\$500
2008	3	0	1	0	\$0
2009	7	5	91	0	\$50,000,000
2010	0	0	0	0	\$0
2011	6	0	1	305	\$5,100,000
2012	2	0	9	0	\$0
Totals	146	5	211	1,044	\$56,084,579

Figure 5: Total reports by year of “catastrophic releases” resulting in or with the potential to result in injuries, fatalities, evacuations/ shelter in place, or significant property damage.

- 6) **Work Plan for FFY 2014:** In order to focus on key priorities, it is important to identify techniques that are effective in the prevention of accidental chemical releases of regulated substances and the reduction in the severity of those releases that do occur. For FFY 2014 priorities include:
- a) **Strategic Planning:** To continue building partnerships with existing health and safety programs by:
 - i) *DEH:* Providing technical support to assist with the inspection of water treatment plants;
 - ii) *DWQ:* On August 1, 2013, the state division of Water Quality and Water Resources merged. Due to the merger, the existing MOA will need to be reviewed and possible updated;
 - iii) *DEM:* Continuing to collaborate with chemical hazard mitigation planning;
 - iv) *OSHNC:* Continuing to collaborate with accident investigations; and
 - v) *NCDA&CS:* Continuing to collaborate with safety inspections of LP-Gas installations and anhydrous ammonia installations (agricultural applications).
 - b) **Compliance Assistance:** To promote the mission of the program by:
 - i) *Technical Assistance:* Continue to offer technical assistance through telephonic and email communication and through the web portal;
 - ii) *RMP Screening:* Conduct technical assistance to owners/operators of facilities that are at risk of failing to update their RMPs at least once every five years as well as other updates required by §68.190 and §68.195;
 - iii) *Emergency Planning:* Continue to work with at least one LEPCs, SERC, or other related association per month; and

- iv) *Industry Outreach*: Collaborate with industry representatives through on site consultation and the development of a training forum.
- c) Regulatory Review and Enforcement: To continue to promote effective chemical safety management programs through technical review of Risk Management Programs by:
 - i) *Air Permitted facilities*: Continue to assure that air permitted facility representatives address RMP implementation as part of their air permit;
 - ii) *RMP Inspections*: Inspect all regulated facilities at least once every five years with emphases focused on EPA designated “high risk” facilities;
 - iii) *Investigate Incidents*: Investigate reports of chemical accidents involving regulated substances; and
 - iv) *Enforcement Actions*: To utilize enforcement powers when violations occur.
- d) Emergency Response Planning: To continue to integrate program goals and objectives, key performance measures, and key benefits into a statewide chemical hazards mitigation strategy by providing technical expertise through:
 - i) *Regional hazmat Studies*: supporting community level risk assessments to chemical hazards;
 - ii) *Technical hazards mitigation plan*: helping communities understand the findings of the regional hazmat studies to develop a chemical hazard mitigation plan; and
 - iii) *THIRA*: Incorporating the goals and objectives identified into a comprehensive community based threat and risk assessment strategy.
- e) Trends Analysis: To continue to measure effectiveness of the program through identified performance indicators such as reductions in community vulnerabilities to releases of regulated substances, number of subject facilities, and impacts from associated chemical accidents.