

**Do you have systems in place to detect leaks and prevent releases from these systems?**

**The St. Clair River site** receives ethylene feedstock from NOVA Chemicals Corunna site and produces polyethylene which is transported out by rail and truck. The process material is primarily self-contained in the process unit. A separated Once Through Cooling Water (OTCW) system is used to cool some areas of the process via cooling water heat exchangers. In the event of a cooling water exchanger tube leak causing process materials escape into the OTCW stream, the material can be detected and the rate of OTCW discharge can be reduced and contaminated water can be diverted to onsite containment. In addition, the lighter volatile process materials will travel to the site flare for destruction. After the flare collection process, OTCW flows through a pellet pond which removes polyethylene solids. The OTCW and process effluent then mix and pass through a skimming pond which can remove floating hydrocarbon if a release were to occur. Any diverted waste streams are sent off site for removal.

The site does not have a biox unit. Final effluent is regulated by Environmental Compliance Approval (ECA) loading limits, which prevents the use of dilution. The ratio of OTCW pressure to process stream pressure varies throughout the site. The majority of the OTCW exchangers onsite are below a ratio of 5:1 (process pressure compared to OTCW pressure).

NOVA Chemicals maintains flame ionization detectors (FID) for monitoring Volatile Organic Carbon (VOC) levels in OTCW. A final effluent analyzer (maintained by 3<sup>rd</sup> party) directly monitors various hydrocarbons at part per billion (ppb) levels. Both the sewer FID analyzers and final effluent analyzer are connected to an Uninterrupted Power Supply (UPS) system which provides a back-up power source in case of a power outage.

**The Corunna site** receives ethane, propane and butane which it uses to produce ethylene and co-products, sent to St. Clair River site, Moore site, Rokeby site and other companies in the Sarnia area. Process wastewater is sent through an on-site wastewater treatment plant that includes physical and chemical treatment stages. A separated storm sewer system collects runoff from non-process areas. The treated final effluent is continuously discharged to a St. Clair River outfall. Stormwater is batch discharged to the river via a municipal ditch. Final effluent and stormwater can be diverted to different points in the wastewater treatment system as part of water management activities.

**The Moore site** has similar processes as St. Clair River site and also produces polyethylene. It has separate effluent and stormwater ponds. The effluent is batch discharged to a St. Clair River outfall. Stormwater is batch discharged to the river via a municipal ditch.

**The Rokeby site** is a recently completed world-scale polyethylene production facility receiving ethylene feedstock from the Corunna Site. The Rokeby site also shares the receipt and transmission of water for cooling, process, and wastewater with the biox operations at the Corunna site, considering its proximity and joint usage of utilities. All process water streams are impounded and transferred as needed for treatment. Any release of water following treatment would make up a portion of the outfall from the Corunna operations described above. Stormwater is directed to an on-site pond and released as needed (based on storm events) through the Allingham Drain ultimately into the Baby and Marsh creeks.

**Limits for Final Effluent Regulated by ECA:  
Nova Chemicals Corunna Site ECA Parameters**

**NOVA cont'd**

<b>Parameter</b>	<b>Daily Maximum (kg/day)</b>	<b>Monthly Average (kg/day)</b>
Ammonia plus Ammonium	188	65
Dissolved Organic Carbon (DOC)	436	256
Volatile Suspended Solids (VSS)	406	220
Total Suspended Solids (TSS)	NA	282
Phenolics	0.57	0.19
Phosphorus	NA	12
Oil and Grease	201	94
Sulphide	3.8	1.9
pH	6.0 to 9.5	
2, 3, 7, 8-tetrachlorodibenzo-para-dioxin	< 20 pg/L	
2, 3, 7, 8-tetrachlorodibenzo-para-dioxin	< 50 pg/L	
Total toxic equivalent (TEQ)	< 60 pg/L	
Acute toxicity testing	<i>Daphnia magna</i> and rainbow trout	
Chronic toxicity testing	<i>Ceriodaphnia dubia</i> and fathead minnow	

**Nova Chemicals Moore Site ECA Parameters**

<b>Parameter</b>	<b>Daily Maximum (kg/day)</b>	<b>Monthly Average (kg/day)</b>
Dissolved Organic Carbon (DOC)	19	11
Total Suspended Solids (TSS)	98	34
Phenolics	0.015	0.007
Phosphorus	1.9	1.1
Oil & Grease	6.6	3.3
Aluminum	2.6	NA
Zinc	0.28	NA
pH	6.0 to 9.5	
Acute toxicity testing	<i>Daphnia magna</i> and rainbow trout	
Chronic toxicity testing	<i>Ceriodaphnia dubia</i> and fathead minnow	

**Nova Chemicals St. Clair River Site ECA Parameters**

**Nova cont'd**

<b>Parameter</b>	<b>Daily Maximum (kg/day)</b>	<b>Monthly Average (kg/day)</b>
Dissolved Organic Carbon (DOC)	440	220
Total Suspended Solids (TSS)	1300	570
Phenolics	0.75	0.34
Phosphorus	22	NA
Oil & Grease	460	170
Toluene	1.3	NA
Aluminum	45	NA
pH	6.0 to 9.5	
Acute toxicity testing	<i>Daphnia magna</i> and rainbow trout	
Chronic toxicity testing	<i>Ceriodaphnia dubia</i> and fathead minnow	

**Can you describe the effectiveness (the outcomes) of the spill prevention initiatives the facility has implemented?**

NOVA Chemicals' spill prevention initiatives have been very successful. NOVA Chemicals strives to build a culture of continuous improvement at all operating sites and has adopted proactive programs that improve operating reliability and decrease the risk of a release. For example, the corrosion under insulation program, which has been regionally implemented over the past several years, has invested over \$8 million in work to inspect and proactively repair piping.