WATCH response to the proposal to delist the St. Clair River Area of Concern
Restrictions on Drinking Water Consumption or Taste and Odour Problems
Beneficial Use Impairment
April 2018

Some Historical Context and Questions

- In 2004 the Industrial Pollution Action Team (IPAT) issued 15 comprehensive findings and 35 excellent recommendations regarding spills to the St. Clair River
- Subsequently Ontario passed Bill 133 (Spills Bill), amendments to the Environmental Protection Act and the Ontario Water Resources Act, dealing with "Environmental Penalties" imposed by regulatory officials.

It is important for the public to understand the status of all the recommendations and to ensure that the collective wisdom from the IPAT initiative is not lost in the archives.

- The IPAT report produced an action plan based on the recommendations which focused on 3 areas
  1. enhancing MOECC's scientific capacity
  2. developing innovative policies to protect the environment
  3. implementing new ways to enforce environmental legislation

The 2004 IPAT report is one of the few comprehensive, multi-stakeholder, independent consultative studies on the drinking water BUI. Aside from the resulting new enforcement legislation of "environmental penalties", communities and industries should be entitled to understand what other recommendations were considered in terms of scientific capacity and innovative policies. We suggest that the 35 recommendations and subsequent action plan be part of any future assessment tool for this BUI.

Background post IPAT:
Wallaceburg Advisory Team for a Cleaner Habitat (WATCH) is responding to the public consultation process facilitated by Canadian Remedial Action Plan Implementation Committee (CRIC).

Discussion Paper June 2017
The Status of the Beneficial Use Impairment
Restrictions on Drinking Water Consumption or Taste and Odour Problems
St. Clair River Area of Concern

The restriction on drinking water designation was based on the numerous chemical spills from direct dischargers in Sarnia's chemical valley from the 1980's. The purpose of the discussion paper was to propose that since the frequency and volume of spills has been reduced in the last decade, it would be appropriate to re-designate the BUI to non-impaired.

WATCH felt that the information in the discussion paper about spill prevention and emergency response to downstream stakeholders by these same direct dischargers was inadequate. Subsequently, WATCH requested a survey to be submitted to each company which is included as Appendix C of the 2017 discussion paper.

As follow up to the survey, in March 2018 WATCH interviewed 6 major direct dischargers at their sites to discuss the data in the survey. In some cases more detailed explanatory notes have been added by the companies. The notes from the interviews are compiled for the community to assess the robustness of each company's spill prevention procedures and technologies.

The next steps from the survey questions Appendix C and explanatory notes are to assess whether or not there are adequate upstream industry processes and technologies in place to sufficiently reduce the risk of spills to the St. Clair River which would impact the drinking water intake for the community of Wallaceburg. Secondly, the community needs to be confident that there are adequate processes and technologies in place to sufficiently protect human health at the water intake in the event of an emergency/threat from upstream. Finally, the community needs to be confident that in the last 3 decades the government has evolved in mandates not only for enforcement but also spill prevention. Although enforcement has improved due to measures such as Bill 133, we are struggling to understand the improvements on spill prevention because, for example, the spill prevention plans are proprietary and there is no community right to know attached to that section of the law.

WATCH acknowledges that there are no regulatory requirements for companies to communicate with impacted communities. ***We are requesting that the conditions listed below in #3 Motion be agreed to "in principle" as part of best practice guidelines for the protection of downstream human health populations and St. Clair River watershed as we move forward in the re-designation process.***

Although the MOECC and ECCC are the regulatory agencies in charge of the protection of human health and ecosystems, the Ministry cannot work alone in a vacuum. WATCH believes in an integrated and voluntary approach to community right to know in terms of human health and viability of the St. Clair River watershed. Most importantly to be sustainable, leadership roles and responsibilities for community right to know and prevention of spills must include industry, the government and municipalities, not just the voluntary not for profit sector.

The following motions were passed by unanimous support at the 2018 WATCH AGM.

Motion #1
That CK PUC be requested to proceed to take necessary measures which will result in access to the online SLEA monitoring station data. This would be in addition to the current practises and procedures currently in place assuring the protection of human health for users of the Wallaceburg St. Clair River water filtration system.

Motion #2
After review of additional information and updates from the March 2018 interviews, Wallaceburg Advisory Team for a Cleaner Habitat (WATCH) accepts the Restriction on Drinking Water BUI Discussion Paper as being complete. We are requesting that the interview notes (mutually agreed by industry and WATCH) be added to the consultative process for public access.

Motion #3
WATCH accepts the CRIC Restriction of Drinking Water process to re-designate the BUI contingent on the following conditions to be developed in parallel to the government's mandate:

1. On a prescribed frequency, the industries which can potentially impact the future downstream drinking water intakes will communicate their spill prevention plans including but not limited to, for example, major changes in procedures and technologies, lessons learned from spill simulation exercises, continuous improvement initiatives. We recommend this process to be considered and included in the company's communication plan and management system as best practice.

2. Should there be a requirement for a water intake shut down as a result of a spill event and/or emergency, there will be an expectation by the impacted community that the company will communicate the status of their emergency response system, the survey responses and changes/improvements to their spill prevention plan, procedures and technologies which would reduce the risk of a similar event. We recommend this process to be considered and included in the company's communication plan and management system as part of best practice.

3. Any new companies which locate upstream of Wallaceburg water intake will be included.

It is distressing that the MOECC is powerless in terms of legal authority, enforcement capability or framework to direct these large dischargers to be transparent with downstream communities on spill prevention technology, emergency responses and subsequent corrective actions (lessons learned). Yet the above three conditions are necessary for the government's own mandate to ensure the sustainability of the re-designation. For this reason WATCH is reaching out for the assistance of the following organizations for support to provide the necessary leadership and co-operation, within their own sphere of influence and expertise, to sustain and augment the government's re-designation goals and objectives because it is the right thing to do.

1. Individual companies who directly discharge into the St. Clair River via ECA permits
2. Sarnia CAER
3. Sarnia members of Chemistry Industry Association of Canada - Ethic of Responsible Care
4. Sarnia members of Canadian Fuels Association
5. St. Clair River Area of Concern, Binational Public Advisory Council (BPAC)
6. Municipality of Chatham Kent

WATCH is encouraged to note that under the Chemistry Industry Association of Canada Ethic of Responsible Care, four of the five companies that we visited have signed a voluntary commitment to comply with the three conditions. These conditions reflect the CIAC Responsible Care Operations and Accountability Codes. For your convenience, few of the required elements of the Accountability Code are listed below.

Companies shall :

i. implement ongoing community awareness and dialogue processes that:

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a. identify and maintain a definition of the community based on criteria such as risk profile of the facility, environmental or social impact, expressed community concerns, etc.

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c. identify and maintain understanding of site community rights, responsibilities, concerns, needs, aspirations, planning processes and resources;

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e. develop and maintain information for both responsive and proactive communication and dialogue with the community, covering products, processes, services, on-site historical waste sites, social impacts, benefits and hazards and associated risks, up to and including worst case scenarios;

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f. include a regular process of communication and dialogue with the community and response to questions, concerns, suggestions, etc.;

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g. provide timely information about plans to modify operations or facilities, and seek and respond to community feedback;

Unlike other jurisdictions such as the US SARA Title 3, OSHA PSM and Alberta Directive060 which have community right to know components in regulations, we are optimistic and continue to look forward to engage with our industry partners to improve communication and transparency through localized voluntary commitments on spill prevention in the St. Clair River. We challenge the government agencies to find innovative strategies to join and engage in community right to know on spill prevention initiatives.

Please contact me with questions and comments.

Yours truly,

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Industry notes (by mutual agreement) for Arlanxeo, Imperial Oil, Nova Chemicals, Shell Manufacturing, Suncor St. Clair Ethanol, Suncor Sarnia Refinery are attached in the following pages. We appreciate the co-operation of the companies in providing this information and hope that MOECC and ECCC through CRIC will add this information to the supporting delisting documentation.

Summary of Arlanxeo and WATCH meeting

The group reviewed the site plan highlighting the 3 effluent outfalls, containment ponds and location of Olefins and Butyl operating areas. All site process water and storm water from process areas is treated at the BIOX Unit. A system of alarms alert operators to off-spec water entering the BIOX Unit, and off-spec water can be diverted to storage until the water can be processed in a manner that will not upset the BIOX process. Detection equipment is installed at the plant and at the river and in the event of a BIOX upset, spill or leak alarms will alert operators.

On its west site, the two main storm water outfalls owned by Arlanxeo drain to the river. These two outfalls also discharge once through cooling water from the Olefins BE#3 unit (discussed below). The combined discharges are continuously analyzed as they enter the river. The third main outfall is a combined discharge of the BIOX Unit and the Cole drain, a storm water drain owned by the municipality. The Cole Drain services public lands and is used by other facilities. The combined Cole Drain / BIOX discharge is also continuously analyzed by Arlanxeo.

The Butyl Unit operates a closed loop cooling water system. The water is cooled in evaporation towers and recirculated to the unit's heat exchangers. The storm water from non-process areas that is collected within a storm water surge pond is typically treated at the BIOX Unit also. During significant rainfall events, the surge pond is on occasion released to the Cole Drain. It is tested before release and MISA monitoring is required during the release.

The Olefins area is currently operating one Butadiene Extraction Unit (BE#3). A second extraction unit (BE#2) is currently not operational. The BE#3 Unit uses once through cooling water. The company has upgraded all of the once through cooling water exchangers from carbon steel to stainless steel tube bundles. This upgrade reduces the risk of failure within the heat exchangers. In the event of a power failure, the circulating pumps shut down and once through cooling water discharges cease. The Olefins area uses acetonitrile as a solvent in the 1,3-butadiene production process, and raffinate is a secondary product of the butadiene production process .
Once through cooling water exchangers operate with the water side at a lower pressure than the hydrocarbon side. Exchangers handling 1,3-butadiene and raffinate operate at higher pressures on the hydrocarbon side than the exchangers handling acetonitrile.

In the event of an exchanger leak, 1,3-butadiene and raffinate will volatilize quickly from the water discharged to the river (since they have boiling points below 0°C) whereas acetonitrile will remain in the water . The cooling water discharged from the BE#3 Unit is analyzed as it leaves the BE#3 Unit and is again analyzed at the point it discharges to the river. Spill response procedures identify steps for operating personnel to quickly identify and isolate a leaking exchanger. Critical exchangers have been twinned for this purpose.

In the event of a spill to the river, ARLANXEO will analyze samples taken from the river at the SLEA monitoring site, since the SLEA monitor is unable to analyze for ARLANXEO materials
The Spill Contingency Plan is updated regularly. It was suggested that ARLANXEO use its Community Advisory Panel to create a brief fact sheet about its Plan to be shared with downstream communities.

Summary of Imperial Oil Sarnia and WATCH meeting

Do you use once through cooling water systems?
Yes, Once Through Cooling Water (OTCW) is used at the Sarnia refinery. Since 2005, Imperial Oil Sarnia has taken significant steps to reduce the number of spills through investments in several new facilities for “holding and treating" any leaks and improved operations associated with the OTCW system.

Is cooling tower blowdown water treated prior to release?
Yes. Cooling tower blowdown is treated through the waste water treatment system consisting of primary, secondary and tertiary treatment prior to discharge.

Do you have systems in place to detect and prevent releases?
Yes. The new "hold and treat" facilities are an additional layer of defense for OTCW system. Continuous detection analyzers monitor the quality of water leaving the heat exchangers. If a leak is detected, the contaminated water will be automatically diverted to storage facilities where it is treated before being released back to the river. This approach fully aligns with the European Union work on defining appropriate spill control technology for OTCW.
During maintenance outages some exchangers were also moved off of OTCW and onto Cooling Tower systems. In addition, some exchanger's metallurgy was upgraded to titanium steel.
The process water treatment system is continuously monitored at the outfall for hydrocarbons and pH. There are also upstream analyzers that alarm to provide early detection of potential issues.

How often do you update the Spills plan?
A site wide review of the plan is conducted annually, as a minimum. Imperial also participates in the annual Sarnia Area Disaster Simulation (SADS), which involves members of the general public. We also conduct site specific emergency response drills related to spill response.

Do you have storm water interception systems to retain?
Yes, the Sarnia site does not have a segregated storm water collection system. All storm water is collected with the process water and treated in the waste water system consisting of primary, secondary and tertiary treatment prior to discharge.

What are the long term plans for spill prevention?
The site continues to invest significantly to improve operational and environmental performance. The Sarnia site has installed inducted gas floatation units in place of filters in the waste water treatment system. These new units are state of the art technology and provide increased capability, reliability and less waste going into landfill.

Summary of NOVA Chemicals and WATCH meeting

Meeting participants reviewed an aerial map of St. Clair River, Corunna and Moore sites with respect to outfalls, process and stormwater ponds, Once Through Cooling Water (OTCW) and MISA stations.

Survey question: 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. 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 OCTW and process effluent then mix and pass through a skimming pond which is designed to 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 MISA 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 3rd party) directly monitors various hydrocarbons at part per billion (ppb) levels. Both the sewer FID analyzers and final effluent MISA 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, 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.

Limits for Final Effluent Regulated by MISA:

Nova Chemicals Corunna Site MISA Parameters (O.Reg. 537/93)

Parameter	Daily Maximum (kg/day)	Monthly Average (kg/day)
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	*Daphnia magna* and rainbow trout	
Chronic toxicity testing	*Ceriodaphnia dubia* and fathead minnow	

Nova Chemicals Moore Site MISA Parameters (O.Reg. 63/95)

Parameter	Daily Maximum (kg/day)	Monthly Average (kg/day)
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	*Daphnia magna* and rainbow trout	
Chronic toxicity testing	*Ceriodaphnia dubia* and fathead minnow	

Nova Chemicals St. Clair River Site MISA Parameters (O.Reg. 63/95)

Parameter	Daily Maximum (kg/day)	Monthly Average (kg/day)
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	*Daphnia magna* and rainbow trout	
Chronic toxicity testing	*Ceriodaphnia dubia* and fathead minnow	

Survey question: 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 few years, has invested over $8 million in work to inspect and proactively repair piping.

Summary of Sarnia Shell Manufacturing and WATCH meeting

An aerial map of the site was used to review 2 outfalls to Talfourd Creek, process areas, water retention ponds for both OTCW process storage and API separators and surface run off.

Shell Manufacturing site contains processes for the refinery (oil/hydro carbon), Shell Chemical (isopropyl alcohol) and Air Products (separate company).

Shell chemical uses cooling towers and all discharges (process water, surface water run off and cooling tower blowdown) flow to the refinery facility. All water is treated in the refinery's wastewater treatment plant prior to discharge for discharge.

There are 3 OTCW (Once Through Cooling Water) streams to manage for discharge.
One stream, referred to as the Clean Water Sewer, has a higher pressure on the cooling water side of the heat exchangers compared to the process stream. Therefore, any leaks in cooling water will flow into the process stream.

The other two streams have lower pressure in the cooling water side of the heat exchangers. Thus, it is at higher risk for contaminants in the cooling water should a leak occur in the exchanger. Therefore, these two streams flow into two oil-water separators, also referred to as Potentially Oily Water Separators prior to discharge

To address the risk of potential leaks via the cooling water processes, all 3 streams have continuous upstream analyzers for dissolved hydrocarbons. In addition the API separators have sheen detectors with alarms to prevent release. OTCW and process water can all be diverted to storage ponds and treated through WWTP. There are 2 storm water management ponds totaling 70 million litres. The smaller pond can be used to divert up to 5-6 million gallons (~25 million litres). The larger pond is used for stormwater only. Shell process water flows into an oil-water separator to remove any free oil, then to dissolved nitrogen flotation units to remove any residual oil and oily solids, then finally into the Biox system (Equalization basin and aeration basin) where microbes remove any dissolved hydrocarbons. There are many operational targets for the Biox unit. Total organic compounds(TOC) are just one of the criteria used to maintain a healthy unit. TOC is actually the "food" for the bugs. Should the discharge from the biox unit be off-spec,the water can be diverted to retention ponds and rerouted for treatment. The company uses continuous on line analyzers and alarms in addition to MISA composite samplers, as the MISA samplers do not provide real-time data.

How often do you update your Spill Prevention and Contingency Plan?
The SPCP is reviewed and signed off annually, at a minimum.

When was your last significant spill reported to MOECC? What were lessons learned? Ie prevention of recurrence?
A small release of hydrocarbon containing material into the cooling water system created a sheen on Talfourd Creek in Sept. 2017. It was discovered that the oil skimming equipment in the POW did not remove all material as expected. It was learned that the type of material released can become entrained in the water column, compromising the effectiveness of the skimmers. Enhanced lighting in the area material will allow operations to improve the response to any future events of this nature.

Shell cont'd

Would you make the Contingency Plan available?
Sections of the SPCP that do not include commercially sensitive information can be made available.

Can you describe the effectiveness (outcomes) of the spill prevention initiatives the facility has implemented?
The Sarnia Manufacturing Centre completes many drills each year that include the prevention or mitigation of spills on and off site. Spills to the river have also been used as scenarios in mock Emergency Operations Centre (EOC) exercises where emergency response focals role play effective response and discuss opportunities for improvement. Shell Global Process Owners in Emergency Response also provide guidance specific to marine response. Shell hosted the annual SADS exercise in October 2017 where local industries, emergency response professionals, and local, provincial, national and international government authorities simulated a marine spill emergency on the St. Clair River at the Shell dock.

There was a preventative maintenance overhaul of the North Potentially Oily Water Separator in 2016 that included the replacement of oil containment and removal equipment.

As part of an extensive multi-phased wastewater treatment plant upgrade project, the dissolved nitrogen flotation units were added to the WWTP in 2015/16.

The north stormwater pond was added in 2012. This provided additional storage for approximately 10 M imp. Gallons of stormwater.

What long term plans for spill prevention?
As part of the wastewater treatment plant upgrade project, Shell is evaluating further enhancements including the review of the primary oil-water separators for greater efficiency and reliability.

Summary of Suncor St. Clair Ethanol plant and WATCH meeting via phone conference

Suncor Energy, located west of Highway 40, discharges to Turnbull Drain. The site draws municipal water for its cooling towers and other water requirements. Corn is shipped in via truck and rail, and dry distillers grains is shipped out by rail and truck. The Ethanol produced onsite and is blended with gasoline (brought in by tank truck and stored in onsite tanks) and is shipped out by tank truck as denatured ethanol to be used as fuel additive. In addition, corn oil is produced for biodiesel feedstock. The site does not use pipelines for offsite distribution of any products. Rail cars are used for corn and dried distillers grain shipping only.

Waste water from non-contact process units and outdoor secondary containments are conveyed through onsite sewage system (ditches) which flows into the Storm Water Management Pond (SWMP). Outdoor secondary containment (such as tank farm containment) structures are manually pumped (batch discharged) to the onsite ditches.

The storm water management pond (SWMP) continuously discharges via gravity feed only. The SWMP is equipped with an isolation valve and online continuous monitors for dissolved oxygen, pH, temperature and flow.

Surface storm water and process water blowdown (cooling tower, reverse osmosis water and water softener) drains into a storm pond which is monitored and continuously discharged. The SWMP has a total active capacity of 7600 cubic meters (approximately 2,007,700 us gallons). In the event of a large tank fire where 4 hydrants were used to apply foam and water (total of 2000 usg/min) for cooling, the SWMP would be able to contain approximately 16 hours of fire water/foam (without the use onsite ditches for containment) before reaching overflow capacity.

To reduce risk of spills, high risk chemicals have secondary containment (with a number of chemicals stored inside buildings with associated sumps) and a system of sumps to prevent offsite discharge. The contained water runoff from the tank farm/ethanol load out secondary containment is monitored for pH and sheen (presence of ethanol) prior to manual pumping batch discharge.

Should a sheen occur, it would be vacuumed and sent to an approval disposal site.
In case of power failure, the process is safely shutdown. Sensors remain operable through UPS backup.
Although the site is not named under MISA, its protocol requirements are listed in the ECA.
The following chart describes MISA testing parameters, frequency and average limits.

Parameter	Test Frequency	Limit (Average)
TRC, Total Residual Chlorine	Weekly	0.05mg/L (monthly)
Oil and Grease	Weekly	15mg/L (monthly)
Dissolved Oxygen	Continuous	≥4mg/L (monthly)
Total phosphorus	Weekly	1mg/L (monthly)
pH	Continuous	6.5-9.5 (instantaneous limit)
Chloride	Weekly	No limit
ICP Metal Scan	Quarterly	No limit
Tolyltriazole	Quarterly	No limit
Temperature	Continuous	<30C (instantaneous limit)
Acute toxicity	Monthly	50% lethal concentration
Chronic toxicity	Biannual	50% lethal concentration & 25% inhibiting concentration

Summary of Suncor Sarnia Refinery and WATCH meeting.
EFFLUENT MANAGEMENT:

1. Do you use once-through-water cooling systems? (yes/no) **yes**

   If "yes", is the cooling water effluent discharged continuously or is it sent to containment and then batch released? **The cooling water is discharged continuously.**

2. Is the process water effluent discharged continuously or is it sent to containment then batch released? **The process water is discharged continuously. We do have impounding basins that can be used to decrease final effluent flow if needed.**

   Process water effluent includes all water that is treated through our on-site Waste Water Treatment Plant (WWTP). The WWTP is designed to use Primary, Secondary and Tertiary treatment to treat and monitor wastewater streams produced in the refinery. Primary treatment in our WWTP mainly consists of settling (using gravity to remove solids from water) and skimming (removing the lop layer of liquid). Secondary/Tertiary treatment consists of biological treatment with aeration basins, settling by clarifiers and carbon treatment.

3. Is the cooling tower blowdown (water) treated prior to its release from the facility? If yes, please briefly describe the treatment. **Yes, water from the cooling tower is treated through the refinery WWTP consisting of primary, secondary and tertiary treatment prior to discharge from the facility.**

4. Do you have systems in place to detect leaks and prevent releases from these systems? Please describe.
   Yes, we have a combination of analyzers that provide a rapid response to any abnormal detection of water quality.

   An online Gas Chromatograph Flame Ionization Detector (GC-FID) monitors the once through cooling water (OTCW) and process effluent. This analyzer's low detection limit and detailed breakdown provides us with an early indication of any potential issues with the OTCW equipment.

   We also have three online Total Organic Carbon (TOC) analyzers strategically located upstream of the GC-FID on our OTCW stream to provide rapid detection of potential issues.

   There is also a hydrocarbon sheen detector on our OTCW separator.

   When an alarm is triggered on any of these analyzers, operations can respond quickly by shutting down the unit or specific sections where the alarm is triggered. The combination of these analyzers provides us with the ability to identify which piece of equipment requires further evaluation.

   In addition to the analyzers, corrosion rates are tracked and they support preventative maintenance programs related to exchangers and other onsite equipment. We also utilize a Process Hazard Analysis (PHA) process where a multi-disciplined team performs a risk assessment on activities around the OTCW and the process effluent. The PHA team identifies improvements that will reduce the risk of impairing the water quality of our effluent.

Suncor cont'd

STORMWATER MANAGEMENT:

5. Do you have stormwater interception systems to retain, and if necessary, treat stormwater? Please describe.
   The site has a storm water collection and drainage system which diverts this water to a storm water basin (SWB). From the SWB, the water undergoes further Secondary and Tertiary treatment in our WWT facility before discharge to the St. Clair River.

   Site impounding capacity is designed for process and storm water containment. We utilize our analyzer capabilities and our preventative maintenance programs to ensure integrity and to quickly identify concerns with OTCW quality.

SPILL PREVENTION:

6. Do you have a *current* spill contingency plan in place? **Yes**
   How often do you update your Spill Prevention and Contingency Plan? **Updates are made to the SPCP whenever we determine an update is required, at minimum the SPCP is updated annually per O.Reg 224/07**

7. Is the Spill Prevention and Contingency Plan posted for public viewing? (yes/no)
   We share our SPCP with local fire, police and emergency services upon request.
   If "no", would you be willing to make it available? (yes/no).
   If "no", can you briefly explain why?
   Suncor is open to sharing an overview of its spill prevention and mitigation measures through various stakeholder interactions, e.g. community/advisory panel meetings, community events, etc. This provides an opportunity to share information about various upgrades and operational improvements that further safeguard effluents from the Sarnia site to the river.

8. Can you describe the effectiveness (the outcomes) of the spill prevention initiatives the facility has implemented? **Reliability of equipment and preventative maintenance activities (ie. proactive inspections of tanks and vessels, increased integrity testing, increased monitoring frequency, etc.) has reduced the risks of spills affecting the St. Clair River. Continued participation in emergency drills (minimum of quarterly basis), both table top and live simulations has proactively identified opportunities for improvement to mitigate the potential safety and environmental effects of a release.**

9. What are the long-term plans, if any, to improve spill prevention at the plant? **The spill prevention plan is reviewed annually to identify opportunities for improvement. All onsite incidents and near misses are investigated to proactively identify conditions that could potentially cause spills so they can be addressed. Our PHA process continually operates to reduce the risk of spills.**