Western Canadian Spill Services Ltd.

OIL SPILL COOPERATIVE

Member Newsletter

JANUARY 2018

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MEMBER NEWSLETTER

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YEAR IN REVIEW

2017 brought with it a plethora of fresh new faces, challenges, equipment and ideas. Just the way we like it! With the ever-changing industry landscape, WCSS has managed to stay the course and is looking forward to remaining a high-quality service to its member companies. As spill preparedness and response support needs continue to redefine themselves, it is a comfort to know that the upstream petroleum industry commitment to support each other through the WCSS conduit remains a strong and significant resource to draw upon.

Membership allows a small 7-person management team to support industry with a large impact, be it in the way of spill response support, equipment, training resources, continuous improvement or community involvement:

14 spills:	1 land-based, 13 to surface water 15 of our response units were utilized over 153 days
54 training events:	22 Coop Exercises 17 Contract Training Sessions 15 Open Registration Courses

As you may recall from our summer newsletter, WCSS had identified an opportunity to examine the Circus Skimmer. It was first seen in Portland Oregon several years ago, resurfaced at the International Oil Spill Conference in Long Beach in May, and observed at ECRC exercise in Corunna Ontario in July. WCSS saw this piece of equipment as having great potential, purchased one and conducted tests on North Saskatchewan River in October. Based on the findings of tests at OHMSETT (90% oil recovery at 2 knots) and our observations, we believe that the Circus Skimmer is as likely or perhaps even more effective in fast water as our common weir skimmers and has the added advantage of being more efficient in terms of the oil/water recovery ratio.

The Annual Chairmen's Meeting was another great meeting of the minds, punctuated by an open platform workshop that allowed our volunteers to review our mandate, identify any potential changes or enhancements and discuss the rationale for change, while observing any potential consequences of the change. It was a dynamic and effective environment for generating some great discussion, and the Executive Sub Committee will have much to consider at their 1st quarter meeting in March. In addition Santa made another jolly appearance, much to the joy of the little WCSS'ers in the making.

WCSS MANGEMENT TEAM

The current WCSS Management Team has been in place since 1996, when the regional industry group Prairie Regional Oil Spill Containment and Recovery Advisory Committee (PROSCARAC) and oil spill cooperatives merged. In 1996 the team consisted of 5 employees of the Petroleum Industry Training Services (PITS) that were assigned a percentage of their time to manage the day to day affairs of the new corporation, with Al McFadyen as the Managing Director.

Over the years PITS morphed into Enform Canada and eventually 4 of their employees became full time WCSS employees with McFadyen taking on the role of President and COO. Over the last few years an Administrative Assistant, Operational Coordinator and Administrator / Analyst were hired, bringing the management group total to 7 employees.

This year marks a new chapter for WCSS with two of its long-term employees leaving the organization; Mike Locke, Operations Manager is retiring at the end of April and President & COO Al McFadyen is leaving the organization in early July. WCSS is confident that both positions will be filled with competent individuals that will be committed to the upstream petroleum industry's spill preparedness oil spill cooperative program.

Both positions will be advertised on WCSS' website www.wcss.ab.ca; please consider and pass on to individuals that you think may be qualified.

Mike Locke & Al McFadyen, Area I/J Large River Exercise 2013

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WINTER RESPONSE

Most of the oil spills where WCSS equipment is required occurs during open water season. The conventional containment and recovery option consists of the installation of containment boom to direct product into a suitable recovery point along the shoreline and using skimmers, vacuum trucks or other means to recover the product. Although there are always safety issues, and in some cases logistic issues, this is a proven technology and is quite often successful in containing and recovering hydrocarbons.

Oil spills in winter are quite often considered a responder's "worst case scenario". Oil trapped in or under an oil sheet is difficult to find, track, contain and recover. Unless there are cracks in an ice sheet or open water along shorelines, oil normally can't be seen or smelled, so even trying to determine the leading edge of a plume can be challenging. Scientists are working on various technologies such as infrared and acoustics to assist, however the only sure way to find and track oil under ice is to auger holes through the ice and visually check for oil. This process is slow and can be dangerous, so responders need to understand what their options are regarding putting workers and or equipment on the ice.

Before any workers or equipment are allowed on the ice, a thorough ice assessment needs to be conducted. This assessment involves determining ice thickness, ice quality and then using a formula, determining the "weight bearing capacity" of the ice.

The assessment is done by cutting out an ice block, measuring the thickness of the ice, determining the percentage of clear ice vs white ice and then referring to a formula referred to as "Gold's Formula" which will identify the amount of weight that the ice will support with an agreed upon amount of risk that responders are willing to accept.

This ice assessment is normally conducted by sending a crew of 2 responders with an ice auger, chain saw, and measuring tools onto the ice surface. A very detailed ice safety plan must be developed prior to anyone entering the ice sheet work site for the first time. The safety plan must also include a rescue plan for workers conducting the ice assessment.

Another alternative is the use of an airboat. The assessment can then be done safely off the boat and the workers do not have to be physically on the ice sheet.

Once the weight bearing capacity is determined, plans can be developed to determine what types of equipment can be used to complete the ice assessment. Ideally it is advantageous to use a mobile auger tracked machine, but this may not be possible, and the assessment may have to be completed using workers, ice augers and a sound ice rescue plan.

Once the oil has been located, the containment and recovery tactics involve creating an opening in the ice sheet and allowing recovery operations to commence.

The most common method in water with current is to cut a slot in the ice upstream of the leading edge, which will allow the oil to surface and float down the slot into a recovery are where the oil can be recovered with skimmers or a vacuum truck.

If the site is a lake or stagnant water, you may be able to cut out a section of ice and use pumps and hoses to direct product to the opening.

Based on the ice bearing capacity the ice slotting can be done using a chain saw, an excavator or ditch witch.

Here are some key messages regarding responding to spills in or under ice:

1. Safety is critical; well thought out safety and rescue plans need to be developed and communicated to all responders working on the site.
2. Don't assume that the information received from one test hole would apply to the entire ice sheet.
3. Be wary of drastic temperature changes over short periods of time.
4. In some cases, a decision to not put workers on an ice sheet is the correct one; the only option may be to try and find open water downstream of in another location.

WCSS RECOGNITION SERIES

WCSS' rolodex has been expanding for years and it is important to us that we recognize the individuals who have contributed much of their time, expertise and experience to help us build the substantial level of support that we can offer our members today. This issue marks the beginning of a new series that we will include in our bi-annual newsletters; enjoy!

We decided to start the new series by featuring two of our long-term volunteers that recently retired from the WCSS Executive Sub-Committee.

Name: S. Ken Chalmers
Companies Represented: Waylan Oilfield; Canadian Hunter; Serenpet; SUNOMA; Shiningbank; PrimeWest; TAQA North and NAL.
Number of Years of Volunteer Service: 36
Positions Held: Steering Committee Member, Chairman, Executive Sub-Committee Zones 1 & 6 Rep
Reason for Volunteering: Back in the early days of oil spill response training I had the pleasure of working for a gentleman by the name of Mr. Gordon Lott. The passion that Mr. Lott showed for mentoring, training and also learning himself was second to none. I was also eager to learn and Mr. Lott allowed me to be involved in the response training. It was then I first met Al McFadyen and could see he had those same qualities as Mr. Lott. I wanted to be a part of that so chose to continue being involved.

Name: Dave Clough
Companies Represented: Petro Canada, Suncor
Number of Years of Volunteer Service: 33
Positions Held: Steering Committee Member, Alternate Chairman, Chairman, Executive Sub-Committee Zone 3 Rep
Reason for Volunteering: In the mid 1970's there was a major spill in the Medicine River north of Eckville, then late 1980's another big spill in the muskeg north of Rocky Mountain House, so the Area H Co-op was considered an important asset to the local oil industry. Being part of this group was a positive for me.

Dave Clough, S. Ken Chalmers

Taking a few PITS courses like Oil Spill Containment and Recovery, On-scene Commander, Oil Spill Response with instructors like Al McFadyen they made the importance of WCSS to the oil industry something that I wanted to be associated with. Also my personal feeling about the importance of oil spill prevention and clean up was always something that I felt strongly about.

VOLUNTEER APPRECIATION

None of our success would be possible without the generous support of our volunteers, be they members of our Board of Directors, Executive Sub-Committee, Issues Committees, Coop Steering Committee members, Initial Spill Response Team members, or custodians. Ours is quite a large jurisdictional footprint, and support from people all over this vast area means we have a close connection to the land and water bodies that we are designed to help protect.

Do you see your company's name here? Contact us for more details about volunteer opportunities!

Access Pipeline Inc.
Alberta Energy Regulator
Apache Canada Ltd.
ARC Resources Ltd.
BCOGC
Bonavista Energy Corp.
Canadian Natural Resources Ltd.
Canlin Energy Corp
Cardinal Energy Ltd.
Cenovus Energy Inc.
Cequence Energy Ltd.
Clean Harbors
ConocoPhillips Canada Ltd.
Cor4 Oil Corp.
Crescent Point Energy Corp.
Dejour Energy (Alberta) Ltd.
Ember Resources Inc.
Enbridge Pipelines Inc.
Encana Corp
Enerplus Corp.
Gibson Energy Inc
High Level Fire Department
Husky Oil Operations Ltd.
Imaginea Energy Corp.
Imperial Oil Resources Ltd.
Inter Pipeline Ltd.
Japan Canada Oil Sands Ltd.
Kinder Morgan Canada Inc.
NAL Resources Ltd.
Newalta Corp.
Obsidian Energy Ltd.
Ouro Preto Resources Inc.
Paramount Resources
Pembina Pipeline Corp.
Pengrowth Energy Corp
Perpetual Energy Inc.
Pine Cliff Energy Ltd.
Plains Midstream Canada ULC
Predator Oil Ltd.
Progress Energy Canada Ltd.
Repsol Oil & Gas Canada Inc.
Ridgeback Resources Inc.
SanLing Energy Ltd.
Saskatchewan Government
SemCAMS ULC
Suncor Energy Inc.
SWAT
Tamarack Valley Energy Ltd.
TAQA North Ltd.
Tervita Corp.
Tidewater Midstream Ltd.
Torxen Resources

OIL SPILL NET ENVIRONMENT BENEFIT ANALYSIS – Dr. Merv Fingas, Spill Science

NEBA or Net Environmental Benefits Analysis is a process to choose optimal spill remediation. NEBA evaluates the benefits of a cleanup strategy less the negative effects that this cleanup strategy may have. The purpose of NEBA is to maximize benefits to the environment of spill cleanup. The NEBA process involves compiling and evaluating all relevant data on the area and situation; predicting the outcomes of each proposed countermeasure; balancing the trade-offs for each proposed countermeasure and finally selecting the best options. NEBA is carried out by the responsible parties as well as the stakeholders including the resource managers in the particular area. NEBA is best carried out before a spill, however, is typically revisited after a spill to readjust the variables to the new situation. Recently, some have suggested NEBA be changed to SIMA or Spill Impact Mitigation Assessment. SIMA is similar to NEBA and contains factors such as socioeconomic factors.

This paper is a brief description of the NEBA process as summarized in Figure 1. First, collect and evaluate the data. Data relevant to the spill or spill scenario are collected, including oil type and environmental loading. This may be enhanced by the use of spill model outputs. The sensitivity of the receiving environment is studied, typically using the existing environmental sensitivity maps of the area. Priority protection targets are chosen. Sometimes, it may be appropriate to divide the receiving environment into compartments to simplify the subsequent analysis. These compartments might include the water surface, water subsurface, shoreline, etc. The biological factors and seasonality elements of the sensitivities are considered. Socioeconomic factors for the area are considered, such as human use of compartments in the study site. Then the possible spill countermeasures for the particular spill or spill scenario(s) are given. Countermeasures are rated for the situation according to their effectiveness and feasibility as well as existing regulations regarding these countermeasures. Countermeasures should always be compared to a 'no response' option. At this stage it is wise to consider the end points of each countermeasure. The ability of a countermeasure to actually achieve a desired end point or expected effectiveness is important.

The second step or stage is to predict outcomes or effects of oil on each compartment or segment in the given situation. The outcome is compared to the case of no response. The negative effects of oil pollution are evaluated and often rated (e.g. 0 to 4, the largest being the greatest impact and 0 being no impact).

The third step is to balance trade-offs between the countermeasures as compared to the no intervention option. For each countermeasure, the benefits are measured by rating or scoring the relative mitigation over the no response option for each environmental compartment or segment.

If scoring is used, a positive number indicates that the countermeasure under consideration is beneficial. If the countermeasure aggravates the situation a negative number is assigned. In one system a score of +3 is assigned if there is a major mitigation of the impact by a countermeasure, and -3 if the countermeasure results in a major additional impact. The scores assigned for each countermeasure are multiplied by the impact numbers assigned for the no-response option. This illustrates the magnitude of the difference between impacts and mitigation. The scores are then totalled for each countermeasure. The scoring or ranking then enables a trade-off comparison between the countermeasures totally and also for each compartment. Rather than a score, some parties have used colours such as red, green and yellow.

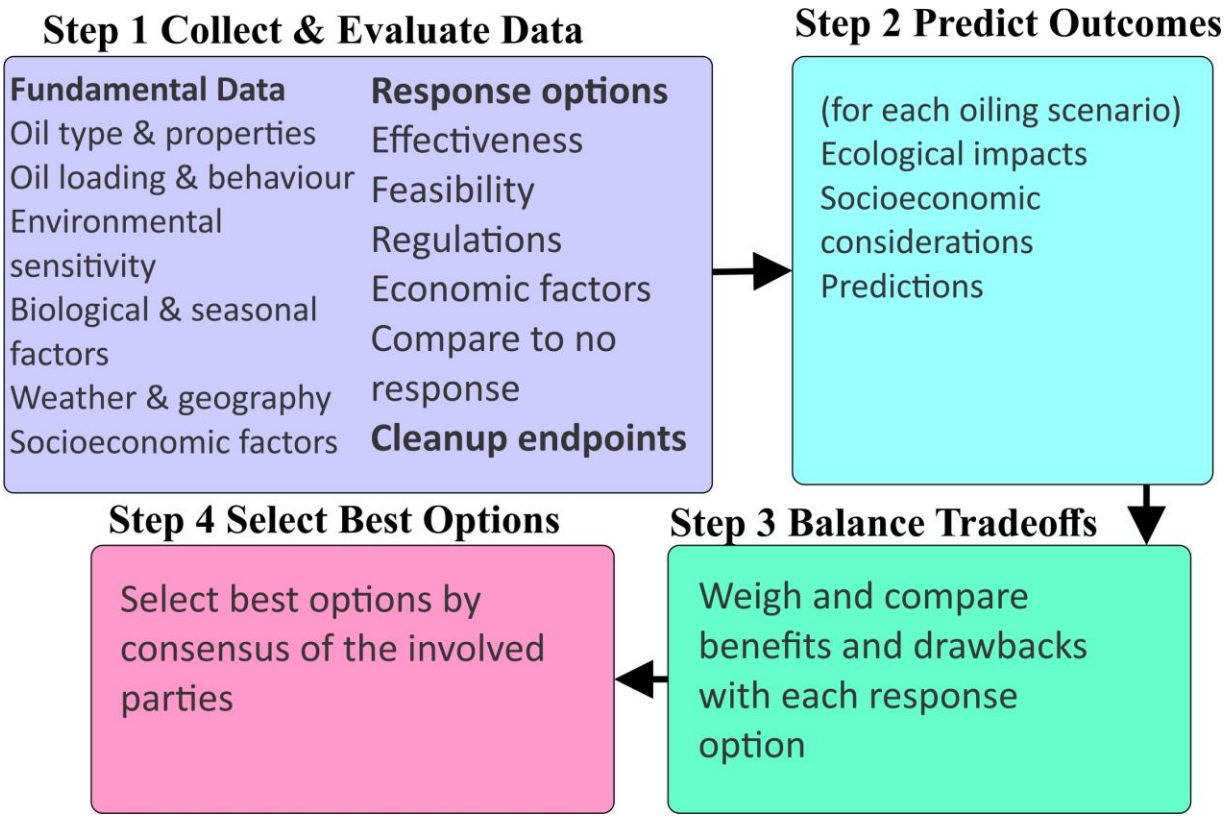


Figure 1: Outline of the NEBA process

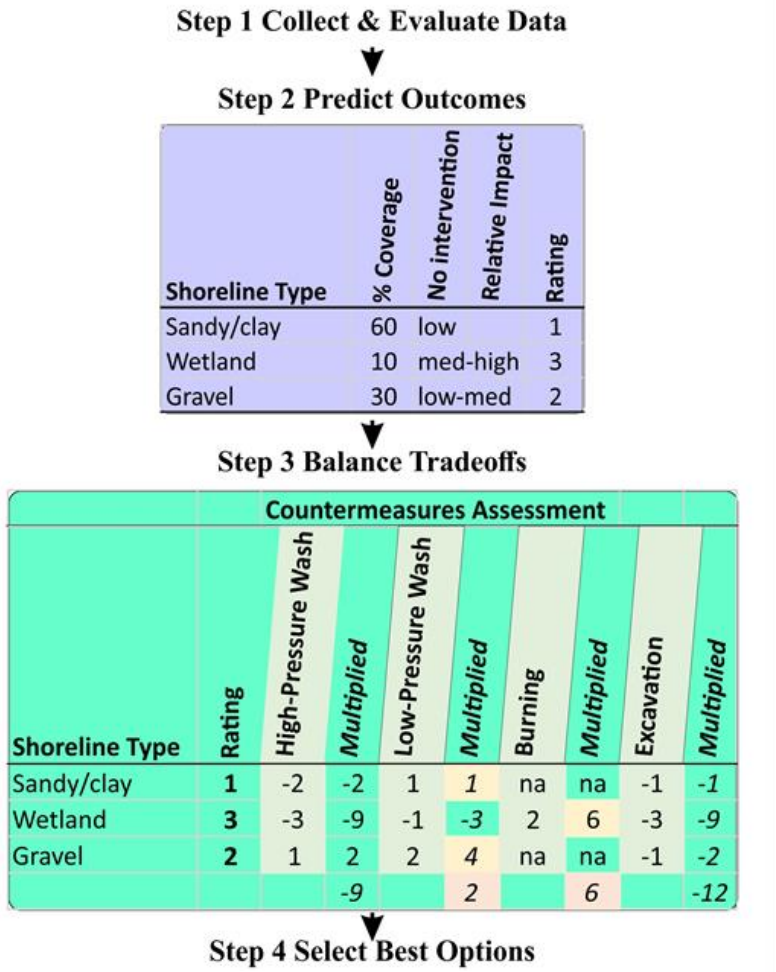
The fourth step is to select the best options. The matrix results achieved in step three are discussed with all parties. New information such as changing spill circumstance, may imply that the matrix and its values need be readjusted. When consensus is reached among all the involved parties, then the best option(s) can be chosen. At the end of the process, the process and its results are documented for further use.

A short and abbreviated example is given here. The example is that of NEBA pre-planning for a crude oil release from a pipeline crossing on a river. The data collected and predictions show that the oil would affect shoreline along the river. Sensitivity mapping and geographic information show that this spill would affect sand-clay, gravel and wetland shorelines. These shorelines are set as the environmental compartments affected. The example is summarized in Figure 2.

Step 2 of the process involves gauging the effects of the oil if cleanup were not performed. This shows that the wetland is most sensitive.

Step 3 is important and involves assigned benefits/set-backs for each proposed countermeasure. Positive numbers are assigned if the net benefit of a countermeasure is positive, negative numbers if the effects are exacerbated. If the countermeasure does not apply to the particular situation, this is noted. These countermeasures ratings are then multiplied by the effects in step 2. This then yields a relative value of the countermeasure over that of no response for that compartment.

Step 4 is to select the best options. As can be seen by Figure 2, there is not one single method that is best for all three shorelines. Burning is best for the wetland. Low pressure washing is best for the other two shoreline types.



Shoreline Type	% Coverage	No intervention	Relative Impact	Rating
Sandy/clay	60	low		1
Wetland	10	med-high		3
Gravel	30	low-med		2

	Countermeasures Assessment								
Shoreline Type	Rating	High-Pressure Wash	*Multiplied*	Low-Pressure Wash	*Multiplied*	Burning	*Multiplied*	Excavation	*Multiplied*
Sandy/clay	**1**	-2	-2	1	*1*	na	na	-1	*-1*
Wetland	**3**	-3	-9	-1	*-3*	2	6	-3	*-9*
Gravel	**2**	1	2	2	*4*	na	na	-1	*-2*
			-9		*2*		*6*		*-12*

Figure 2: A NEBA abbreviated example applied to a pipeline leak

NEBA offers a systematic way of evaluating countermeasures for specific spill scenarios. It involves consensus among stakeholders to rank the effects of the spill and the benefits/setbacks of various countermeasures to the spill. NEBA is best done before a spill, however would need readjustment to the actual spill conditions. NEBA should not delay rapid action meant to reduce the amount and impacts of the spill, but should be used to enhance the benefits of countermeasures. Effectiveness of each countermeasure should also be considered as a multiplier in the countermeasures consideration. ♦

Bibliography

IPIECA, Guidelines on implementing spill impact mitigation assessment (SIMA), http://www.ipieca.org/news/ipieca-releases-technical-support-document-on-spill-impact-mitigation-assessment-sima/ 2018

ASTM F2532, Standard Guide for Determining Net Environmental Benefit of Dispersant Use, ASTM International, Conshohocken, PA., 2016

COMMUNITY SERVICE

Emergency Response Managers within First Nations communities travel from all over Alberta to receive annual training in Edmonton each year.

WCSS was invited to participate in the Alberta Emergency Management Agency First Nations Emergency Response Conference in October, 2017. Over 2 days, Doug Gibson and Shannon Jarrell provided 3 separate dryland oil spill equipment deployment demonstrations to groups of approximately 15 students.

The program was well received and WCSS is scheduled to provide additional training to First Nations communities again in 2018.

2018 TRAINING

We are diving right in this year with 5 winter-based training events – the first Winter Exercise is set to take place on February 7th in Lomond, AB. This is exciting, as it has been many years since the last winter exercise in southern Alberta. The Steering Committees have collaborated to run a Zone exercise, meaning that any member company that operates within Coop Areas P, Q, and S will have the opportunity to attend. If the timing doesn't work out, they have the option to attend any of the Small Water Deployment exercises planned for later in the year.

If you have some experience with our Winter Exercises and would like more hands-on opportunities, you might consider taking our Spill Responder 300 course in Nisku, at the Energy Safety Canada training campus. This training delves deeper and allows complete access to all equipment and strategies in a controlled environment, with an open-book exam at the end of the day. Elevated skill levels can be expected from taking this training.

WCSS pride ourselves on the ability to match most training needs in the area of oil spill preparedness and response and can customize training to meet your in-house needs; for additional information contact Shannon Jarrell at (587) 393-9622 or email at shannon.jarrell@wcss.ab.ca.

Testimony from recently certified groups:

> The training was great, I received very positive feedback from the members. Some have expressed that it was the best training they attended since being on the oil spill team. Todd Whitby and Kale Haupt were very knowledgeable and professional instructors.
>
> - *Imperial Oil*

Great Boat Handling course and very useful for spill response

- *Exxon Mobil*

It was nice to finally get instructors who know what they're doing. Awesome course, they were great.

- *Enbridge*

Well worth the time and money.
Best training course I have been involved with!
Course was very interesting, good content, valuable information. Useful for spill response.
Great course for work and at home.
Excellent – lots to take back and correct.

- *TransCanada Pipeline*

COOP Exercise 2018 Schedule		
Zone 1	**Type of Exercise**	**Date**
P	Winter Deployment	February 7
P	Small Water Deployment	June 27
Q	Winter Deployment	February 7
Q	Small Water Deployment	September 26
S	Winter Deployment	February 7
S	Small Water Deployment	August 22
Zone 2	**Type of Exercise**	**Date**
H	Small Water Deployment	June 19
M	Awareness	February 21
N	Small Water Deployment	June 20
O	Lake Deployment	September 26
U	Small Water Deployment	August 14
Zone 3	**Type of Exercise**	**Date**
G	Small Water Deployment	May 15 OR May 16
I/J		
Zone 4	**Type of Exercise**	**Date**
D	Small Water Deployment	September 19
W	Small Water Deployment	September 11
Zone 5	**Type of Exercise**	**Date**
VR-1	Winter Deployment	February 28
VR-1	Small Water Deployment	September 12
Y	Large River Deployment	August 22
Zone 6	**Type of Exercise**	**Date**
A	Small Water Deployment	May 30
C (FSJ)	Small Water Deployment	September 19
C (FN)	Winter Deployment	March 14
E (Grande Cache)	Awareness	March 20
E (Fox Creek)	Awareness	October 16
T	Awareness	October 23

Online registration for Coop Exercises is now open: Coop Exercise Schedule. You can register at any time, even if you are not sure who will be attending. The email address used to register will receive a 2-day reminder.

WCSS Open Registration Courses 2018	
Course Name	**Date(s)**
Spill Responder 100	March 21
Spill Responder 100	October 2
Spill Responder 200	July 11 – 12
Spill Responder 300	February 14
Spill Responder 400	July 18 – 19
Spill Responder 500	October 3 – 4
Marine Emergency Duties MED A3	June 4 – 5
Boat Handling: Oil Spill Containment &	June 6 – 8
Boat Handling: Recertification	June 5

We have accepted several registrations for our open courses already – please peruse the wide selection that we offer and contact Leona Boisselle at (587) 393-9620 to register today.

Spill Responder Series
Transport Canada course: Marine Emergency Duties (MED) A3
Boat Handling & Boat Handling Recertification

Did you know…

If you are looking for a great safety meeting topic, or have had an opportunity to attend one of our exercises and would like some tools to reiterate what you've learned with your own group, consider the Awareness Training Kit as a complement to your in-house spill preparedness program.

In addition, WCSS member companies are encouraged to get out and practice what they have learned at our exercises, by signing the Equipment Lease Agreement and arranging for transport and security of the equipment in their area. Simply by giving us a call, we can assist you with your own training plans and ensure that all of our member companies maintain access to the equipment, should they require it. This type of internal training may be supplemented by the Equipment Deployment Banners that we have developed for a step-by-step guide when in the field.