



# THE SAFETY STOP

COJO's MONTHLY NEWSLETTER

On Location from: COJO Diving World Headquarters  
158 Garden Grove Road, Lincoln, NB, Canada

ISSUE 40

## What's New

Welcome to the **May 2014** edition of The **COJO Diving Safety Stop Newsletter**.

**April** was crazy with courses!! COJO ran an **Advanced Open Water, Enriched Air Nitrox, Intro to Tech, Normoxic Trimix, Sidemount Diver** and **two sold out courses of Advanced Recreational Trimix!!** Most of the diving was done on Deer Island but there were also a couple dives done on the main land. One at Beaver Harbour's First Cove, which is now passable, and one at New River Beach!!



COJO also got their **BRAND NEW Trimix blending station** up and running and wasted no time at all using it!! Joe has been blowing up balloons all over the neighborhood for the entire month!!! Not to mention diving!!!

**Doc Octo** is back with another awesome article. This one is on **Oxygen Toxicity and diving!!** Great work Doc Octo!!

A very big congratulations to **Mike Lavallee** on his **100<sup>th</sup> dive!!** WOW what a landmark Mike!! **Great job!!**

COJO encourages you to send in your pictures for the **Photo Of The Month**. If your picture gets chosen, your picture and name will be published in the Safety Stop and you could win a coupon redeemable for merchandise or services at COJO Diving.

If you would like to stop receiving this newsletter please reply to this e mail with "Unsubscribe Me" in the Subject Line

Thanks and Safe Diving!!  
Connie and Joe  
COJO Diving



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During **April**, COJO ran a ton of courses including their first IANTD ones. It was absolutely nuts around the shop!! We ran:

- **IANTD** Normoxic Trimix
- **TDI** – Intro to Technical Diving
- **DAN** – Oxygen Provider Course
- **PADI** – Enriched Air Nitrox
- **PADI** – Advanced Open Water
- **PADI** – Sidemount Diver
- **IANTD** – Advanced Recreational Trimix

**CRAZY Busy!!!**



Congratulations to **Billy Lee** on completing his

**Recreational Sidemount Course!!**  
**Great Job!!**

## Courses To Come

For **May and beyond** here is a quick look at what is coming up!!

- 1 to 4 May 14 – **IANTD / TDI Adv Rec Trimix / Helitrox**  
(Classroom and Dives, Session 1)
- 8 to 15 May 14 – **IANTD / TDI Adv Rec Trimix / Helitrox**  
(Classroom and Dives, Session 2)
- 22 to 25 May 14 – **PADI Deep Specialty**
- 22 to 25 May 14 – **IANTD Recreational Trimix**
- 5 to 8 June 14 – **PADI Sidemount Diver**
- 12 to 15 June 14 – **TDI Intro to Technical Diving**
- 19 to 22 June – **PADI Rescue Diver**

If you are looking for a specific course you don't see here, give us a call!!





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### Excursions During April

During April Connie and Joe stayed close to the shop. They completed a ton of improvements to get the compressor and compressor room ready to mix Trimix with their brand new Trimix mixing system!! They had to install a window in the compressor room as well as completely install a new **Tri-Hunter Trimix mixing system!!!** It is absolutely awesome!! **Come in and check it out!!**



On another side note, the **gear bath** is open again for the season!!

**If you dive your gear, you can rinse it here!!**

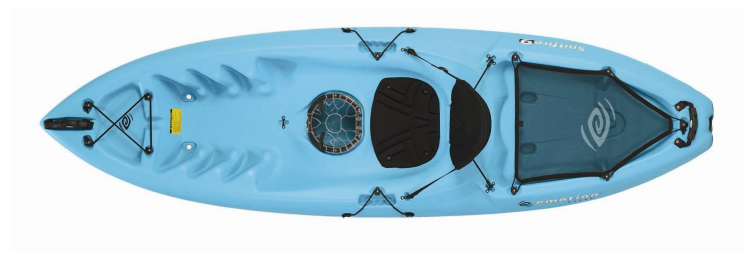


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### AWESOME EVENT ON THE HORIZON!!

Coming up this month, **COJO** will be teaming up with **Akona** Rep **Michelle Richards** to bring you some Fun in the Sun!! That's right, Michelle will be here to present some of the latest and greatest **adventure gear** that COJO has to offer!! **Kayaks**, **Stand Up Paddle Boards** and all kinds of fun stuff like that!! Don't miss it!!



### EXCURSIONS TO COME

## WRECK DIVING – HMCS SAGUENAY 9 TO 10 AUG 14

Come on out for an awesome weekend of wreck diving on the **HMCS Saguenay** in **Lunenburg Nova Scotia**!! This is a fantastic wreck and a favorite to all who dive her!! Don't miss out, last year we were **PACKED**!! We will be offering a **Basic Wreck Course** that weekend as well if anyone is interested.







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### NEWFOUNDLAND 2014!!!

That's right, we are planning another trip to **Newfoundland** for July 19 to 26, 2014!!! If you have never been to Newfoundland and haven't been on these wrecks **now is the time!!** If you have been there, nothing more needs to be said!! It is **World Class Diving** and will be a **World Class Trip**.

We are well into the planning and we have collected deposits. **There are just 3 spots available** so if you are interested, let us know. This is the trip of a lifetime!! We will be offering several courses such as **Advanced Nitrox and Decompression Procedures**. Don't miss out!! If you are interested, send a note to [info@cojodiving.com](mailto:info@cojodiving.com) for details!!





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### ASK DOC OCTO...

#### Oxygen Toxicity



About 500 hundred years ago the renaissance scholar Paracelsus made the pithy remark **“the dose makes the poison”**. In discussing oxygen toxicity this is exactly the point. We correctly understand that oxygen is an essential element for the survival of higher animals on our planet. Yet breathing oxygen at high concentrations is actually toxic. The Sweet really nailed it when they sang **“Love is like oxygen, you get too much you get too high, not enough and you’re gonna die...”** And by “high” they mean death by pulmonary or CNS toxicity, but more on this later. The real story of earth’s oxygen starts billions of years ago. In earth’s earliest days oxygen was essentially absent from the atmosphere. Then, about 2.5 billion years ago, single celled organisms began producing oxygen as a waste product of photosynthesis. That’s right, life as we know it would be impossible without the benefit of microbe farts. As the concentration of oxygen rose in the atmosphere, life evolved to exploit this element for cellular respiration. While the concentration of oxygen on the young planet may have fluctuated, the diversity and complexity of life exploded because of it. In recent history, our primate ancestors flourished in an atmosphere of about 21% oxygen. I think its important to remember that our bodies evolved to run on “regular” and not “high-test” gasses.

#### ***Sometimes all I need is the air that I breath...(The Hollies)***

As you know, the air we breath at the surface contains 21% oxygen at one atmosphere. That means that the partial pressure of oxygen (also called  $ppO_2$ ) is  $0.21 \times 1 \text{ ATA}$  or 0.21. When we dive, the ambient pressure increases and consequently the partial pressure of oxygen must also increase. For example, while diving air at 66 fsw (feet salt water) the partial pressure of oxygen in is now  $0.21 \times 3 \text{ ATA}$  or 0.63. Who cares that the  $ppO_2$  of oxygen is 0.63? Well, since the title of this column is oxygen toxicity you might imagine I’m going to tell you that there is “too much of a good thing”. Experiments have shown that the human body can tolerate a  $ppO_2$  of 0.45 for a very long time without much problem. The higher the  $ppO_2$  levels, the shorter time it can be tolerated. However, if all diving were done on air at recreational depths (up to 130 fsw) oxygen toxicity actually wouldn’t be much of a problem. For example, the oxygen exposure while diving on air at 130 fsw is a  $ppO_2$  1.04. Given a no-decompression-limit of about 10 minutes at that depth, the oxygen exposure is trivial. However, when divers move outside of the recreational limits of time or depth or use rebreathers or



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gases other than air, issues of toxicity really do matter. Studies over hundreds of years have shown two main systems as vulnerable; the brain and the lungs.

**He ain't too smart but he gets things done, drinks his beer like its oxygen...(John Prine)**

Since seizures are more spectacular than coughing, let's talk first about brain or CNS toxicity. As you recall from your Nitrox training, diving on recreational Nitrox is done below a  $ppO_2$  of 1.4, with a contingency of 1.6. It would then follow that it is the  $ppO_2$  of 1.4 that determines the maximum operating depth (MOD) of a particular Nitrox mix. However, like everything else in diving, sensitivity to CNS toxicity varies widely between individuals and within individuals on different days. Sensitivity can be increased with increased  $ppCO_2$  as well as increased workload, stress and the use of stimulants. We all remember the **CONVENTID** mnemonic for the symptoms of CNS toxicity; **CON**vulsions, **V**isual changes, **E**uphoria, **N**ausea, **T**witching, **I**rritability (SHUT UP) and **D**izziness. Sadly, the first symptom of CNS toxicity may be seizures. Seizures are of course potentially lethal at depth because of regulator loss or ascent while breath holding. Most modern dive computers keep track of CNS exposure. However, for planning multiple dives, tables and procedures to give credit for surface intervals can be used to track exposure. As you recall the brain and the lungs hate high concentrations of oxygen. Interestingly, the brain is sensitive to exposures over a  $ppO_2$  of 1.6, while lungs are sensitive to long exposures at lower  $ppO_2$  levels between 0.45 to 1.6.

With multiple dives on multiple days or longer dives with rebreathers lung or pulmonary oxygen exposure begins to become more important. Symptoms of increased oxygen exposure (either time or concentration) include an irritation in the throat, followed by a cough, difficulty breathing and finally shortness of breath. Ironically, our increased exposure to oxygen can eventually cause death by causing lung damage and an inability to take up oxygen. As with CNS toxicity, pulmonary sensitivity to increased oxygen concentration or duration depends upon the diver and the day. Keeping track of pulmonary (lung) oxygen toxicity is done by tallying oxygen exposure using specific tables, setting daily exposure limits and getting credit for breathing air at the surface.

In short, for most periodic recreational dives, especially on air, oxygen toxicity is not really an issue. However, repetitive diving or with increased oxygen gas mixes, decompression stops or really any attempt to "see how deep the rabbit hole goes" requires additional training and attention to oxygen exposure.

**Give me oxygen, give me oxygen, give me oxygen, box o' turds  
(Frank Zappa)**



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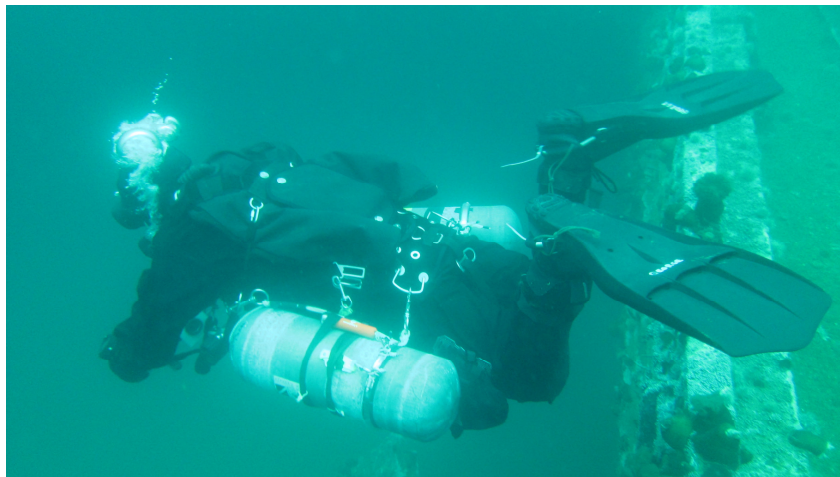
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### May's Featured Course

### PADI Rescue Diver Course (June 20 to 22)

"Challenging" and "rewarding" best describe the **PADI Rescue Diver** course. Building upon what you've already learned, this course expands on what you already know about how to prevent problems, and how to manage them if they occur. The course combines classroom, confined water and ocean dives to master your skills!

To enroll in the **PADI Rescue Diver** course, you must be at least 12yrs old and have a **PADI Adventure/Advanced Diver** (or equivalent), and have current First Aid and CPR certification (within the past 2 years). First Aid and CPR training is available for an additional fee.



**Course Cost: \$300.00+HST**





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### MAY'S FEATURED PRODUCTS

#### COJO Chammyz Jackets!!

Chammyz are soft, yet durable garments, designed to provide the utmost in warmth and comfort — offering the highest level of protection against rapidly changing weather conditions. Their unique design promotes maximum water absorption from your body. Our resilient line of active gear is worn and endorsed by boaters, lifeguards, surfers, water skiers, swimmers, divers, winter sports and outdoor enthusiasts throughout the world.

- ☐ **Moisture Wicking – Absorbs and Evaporates**
- ☐ **Fabric Dries Quickly – Keeps You Dry**
- ☐ **Breathable – Maximum Comfort**
- ☐ **Lightweight – Comfortable and Breathable**
- ☐ **Blocks UVA/UVB rays – Sun Protection: Rated at 50+**



1 SURF BOMBER - \$79.00



2 CLASSIC PULLOVER - \$67.00



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### Photo of the Month

Our May Photo of the month was taken by COJO's own, **Connie Bishop**!! This picture was a mooring line on **Deer Island** that Connie photographed. Look at all the life!! That is just on one line!! Great picture Connie!! For her picture, Connie wins one free date with Joe at **Pizza Hut**.



**Keep sending in those pictures!!**



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### Other News

Our book “**Sidemounting for the Recreational Diver**” is available online or in our store. We kept the costs low and there are some fantastic lessons in it for all divers, not just Sidemounters.



We would love for you to follow us on Facebook. Become a friend of COJO Diving at <http://www.facebook.com/COJODiving>

Our **COJO Gear Washing station** is back up and running for the dive season!! If you dive it, you can rinse it here!! Come on in and check us out!!

Congratulations to **Mike Lavallee** on his **100<sup>th</sup> Safe Dive!!!** Awesome job Mike!!



Come in and visit us at the **COJO Diving World Headquarters!!** We have a beautiful facility with a nice fireplace to sit and warm up at after a cold day of diving. There is always lots of coffee and hot chocolate and Joe usually has fresh popcorn on!!

Thanks and we are looking forward to diving with you soon!!

Connie and Joe!!