

“I am Certified”

By
Larry "Harris" Taylor, Ph.D.



**Diving Safety Coordinator
University of Michigan**



➡ **divegeek@earthlink.net**
lpt@umich.edu

“Why Not Authorized”

“Scientific Diving” is NOT about Diving

“Scientific diving is diving performed solely as a necessary part of a scientific, research, or educational activity by employees whose sole purpose for diving is to perform scientific research tasks.”



**It is about:
Data Collection**



“Doing Academic Stuff” Under water

**Since diving is just a mode of transportation,
Skill level must exceed recreational training**



**‘cause diver
needs to focus
on the mission / science**



In-water skills/comfort must be a given

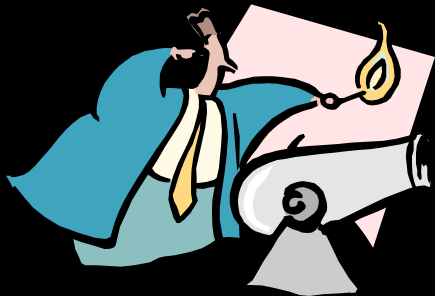
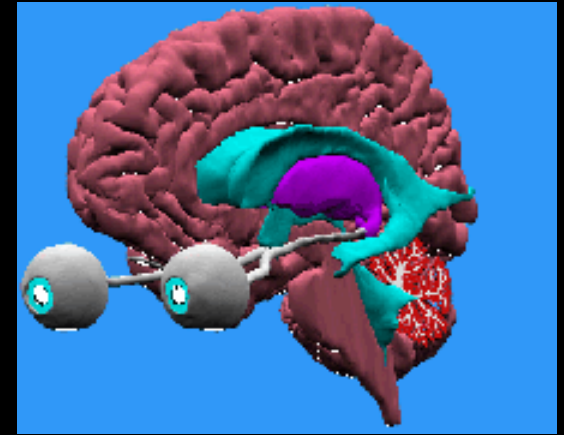
**We are land-walking,
Air-breathing critters
We do NOT breathe water**



Primitive Brain:

Beyond Conscious Control Responsible For "Survival"

When Threat "Perceived"
(As Opposed To Actual)
Initiates
"Freeze, Fight, or Flight!"



Primitive Brain Notes:

Cannot Breathe

Vision Blurred

Water Dense

Speech Difficult

Water Chills

Equipment Heavy

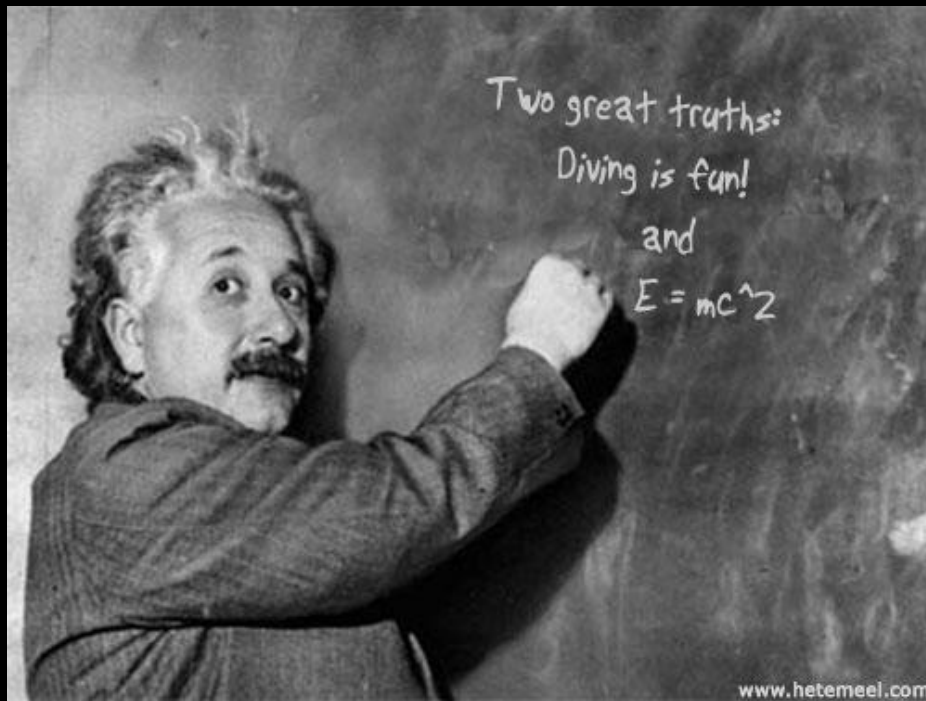
So,

Descent Alerts Defenses

"Escape to surface"

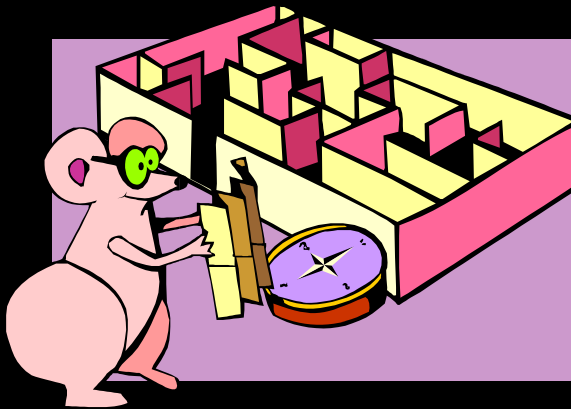
(Can be fatal)



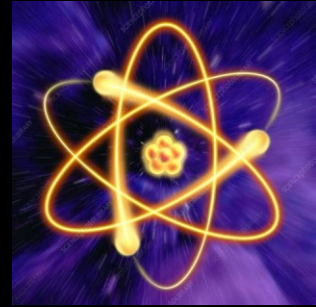


**Scuba Training
SHOULD BE**

**"Behavioral Modification"
To Convince "Primitive Brain"
That It Can Not Only Survive,
But Enjoy The Underwater World**



Training “Quantum Point”



Diver Leaves Water with Cheshire Cat Grin

NEVER

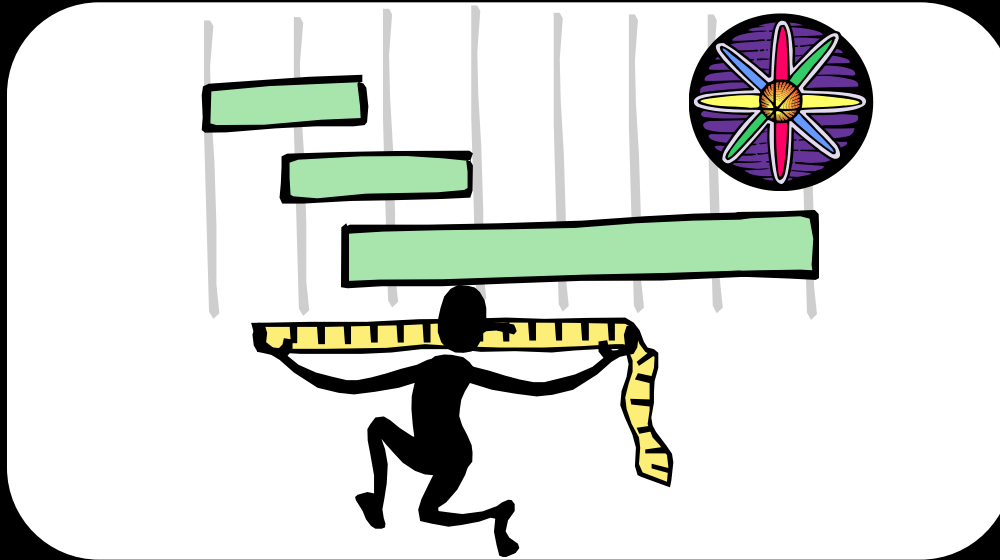
LESS THAN

16 hours pool time

100 minutes open water

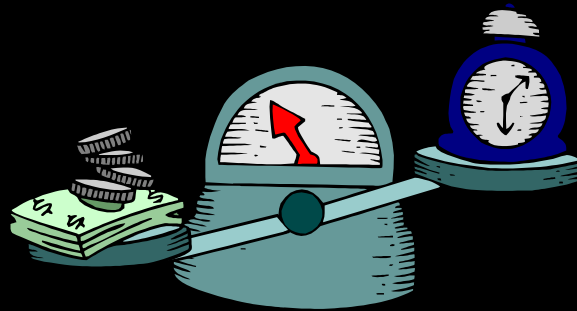


Adaptation



**The shorter the training,
The further from desired behavior,
The less likely to adapt
And
The more likely to drop-out**

Unfortunately, Today's "Profit-Driven" Training (Not "Performance-Driven") Falls Short of the "Quantum Point"



Agencies will alter science & history to suit marketing

It's What You Don't Know That Hurts You!

“The It Won't Happen to me Syndrome”

Somers (1976), U of MI

Divers not being informed of risks

Morgan (1995) , WI Sea Grant (NSF)

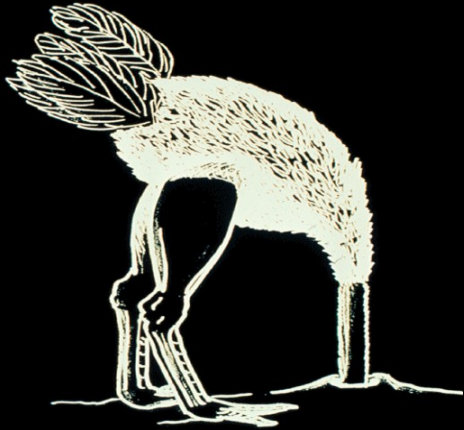
“incompetent people cannot recognize just how incompetent they are,” (Dunning-& Kruger, 1999)

**>90 % of people can't cope with emergencies
(Leach, 2007)**

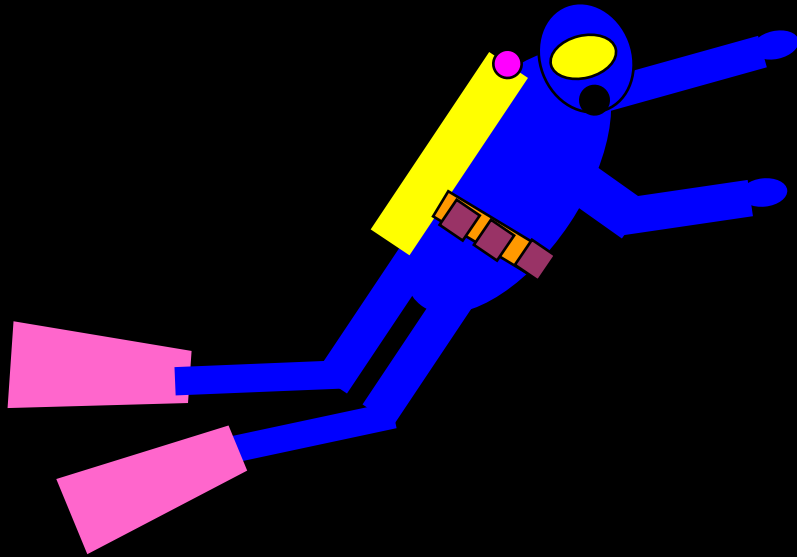
**Inability to control buoyancy now a factor in European scuba deaths
(BSAC, 2007)**

**Many accidents result from degradation of training standards
(Gilliam, 2010)**

**Many (>40%) dive fatalities are novice (< 1 yr) divers
(DAN, 2010 - 2013)**



Today's Diver



Non-knowledgeable

Poor Fitness

Over-weighted

Inadequate Buoyancy Skills

Oriented Towards Surface

Bicycle Kick

Fins Too Stiff

Covered With Danglies

Excessive Hand Movements

Not Self-Reliant:

Relies on Equipment

**Drop-Out Rate
Estimated at > 95%**

Recreational Training Necessary, But Not Sufficient For

"Mission-Oriented" Diving



Poorly trained diver:
Safety risk to self & others
Liability to project

Currently DAN Numbers:
47% of dive fatalities < 1 year experience

C-Cards / Log Books Are Not Reliable Skill Indicators

Advanced Diver



C-Cards Sold

Animals Certified

Given As Rewards

"Battle Royale"

28 Days to Become Instructor

Specialty Newbie Today;
Instructor Tomorrow

Agencies start by selling instructor cards through the mail
Some specialty instructor authorizations require only fee payment

Given that C-Cards Are Not Reliable Skill Indicators: Scientific Diver Authorization Requires:

Documentation of training (c-cards)
Documentation of experience (log book)
Documentation of knowledge (exams)



**In-water evaluation for everyone by qualified DSO
(regardless of c-card level /experience)**



**The Lesson of History:
This process has created
one of the Planet's Best Safety Records!**

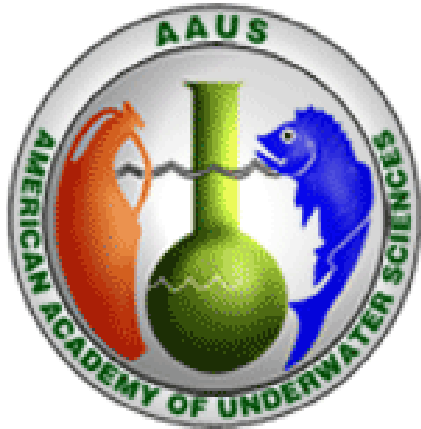


**AMERICAN ACADEMY of
UNDERWATER SCIENCES**

**OSHA Set Rules For Commercial Diving
Began As Means To Define Academic Diving
Sets Standards For Academic Diving
One of World's Best Safety Records
Reference Resource
Reciprocity**



LPT



**AMERICAN ACADEMY of
UNDERWATER SCIENCES**

Reciprocity

Allows Diving at other institutions

Allows diving on NOAA vessels

In Jeopardy:

NOAA deaths

US Coast Guard deaths

Recreational Diving Deaths (Kill-boa)



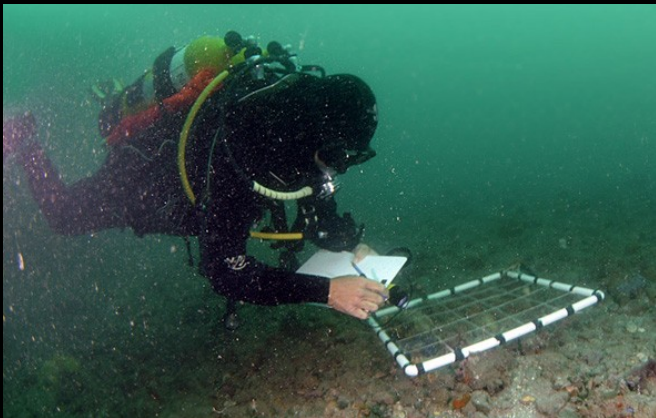
AAUS Exemption under constant challenge

American Carpenter & Joiner's Union

Loss of Federal Exemption:

**Academics would be classified commercial divers
(requires joining union)**

Vessels would need chambers on board





**AMERICAN ACADEMY of
UNDERWATER SCIENCES**

Standards For Academic Diving

Historically, based on 15 weeks (semester):

30 hours lecture (basic diver)

30 hours lecture (in-water scientific techniques)

30 hours pool

Plus: First Aid, CPR, DAN O₂ & Hazmat

First Open Water Weekend: 5 dives (>250 minutes)

Additional water training:

rescue, navigation, night, deep, EANx, etc



**AMERICAN ACADEMY of
UNDERWATER SCIENCES**

Safety Record Allows Federal OSEH Exemption

Decrease in diver skills forcing re-evaluation

Believes Federal exemption is at risk



Michigan Diving Authorization



Purpose:

Ensure Health & Safety of Divers

Provide Liability Protection For PI's

Provide Liability Protection For University



Michigan Diving Authorization Requirements:

1. Certified Diver (Valid C-Card)
2. Current ARC/AH / AAOS Adult CPR
3. Current ARC / AAOS Standard First Aid
4. Current DAN O2 (EHS provides)
5. Physical Exam (umich Health Care Professional)
6. Complete Application / Legal Forms
(Interview with DSO)
7. In-water evaluation by university DSO



Valid as long as
all certifications are current
12 dives per year
Expires: Any lapse

Authorization Checklist

Obtain Prior to Skill/Knowledge Interview with the Diving Safety Coordinator

- ☐ Application for Diving
- ☐ Personal Diving Information
- ☐ Copy of Basic & Highest Scuba Certification Cards
- ☐ Copy of Current CPR Certification
- ☐ Copy of Current ARC Standard First Aid (or Equivalent)
- ☐ Copy of Current DAN O₂ Provider Certification
- ☐ Copy of University of Michigan Medical Authorization to Scuba Dive
- ☐ Copy of Logbook for Review
- ☐ Record of Regulator Inspection (if using personal regulator)
- ☐ Record of Cylinder Inspection (if using personal cylinder)



After Skill/Knowledge Interview with the Diving Safety Coordinator

Date of Interview _____

- ☐ Signed Acknowledgment of Risk
- ☐ Signed Statement of Understanding
- ☐ Pool Skill Evaluation (if required by Diving Safety Coordinator)
- ☐ Open Water Skill Evaluation (if required by Diving Safety Coordinator)
- ☐ Diving Theory Written Examination (if required by Diving Safety Coordinator)



Diving Authorization Types:



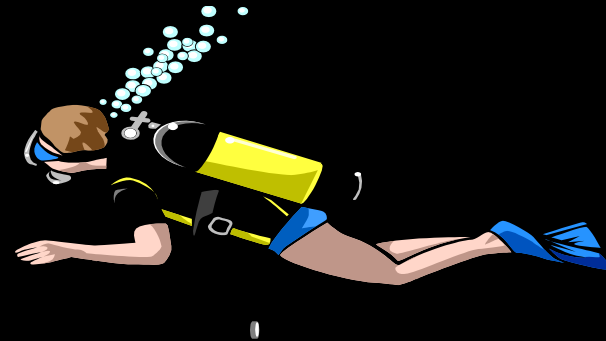
Restricted
Open-Water
60 fsw
90 fsw
120 fsw

Specialties: night, dry suit, full-face mask, EANx, etc.

Bottom-line:

The "Loved-One Rule"

**Would I Allow/Certify This Person
To Dive With The Person I Love the Most?**





Michigan Diving Authorization



Has been recognized world-wide

As the among the "leaders and best"

Behavior other than the "best"

Raises eyebrows

Increases surveillance

Impacts entire scientific diving community

Recreational deaths at Gilboa focus local attention



OK TO DIVE" ??????



Off-campus authorizations protect THEM, not you!

Diving without umich authorization may remove:

**You / PI / Department from umich liability blanket
(You, not umich, pay)**

**Wayne County (Detroit)
Largest awarding jury in the nation**

Examples of Local Scuba Litigation

CO Poisoning At Wayne County

Physician did NOT use hyperbaric chamber

To avoid future litigation

U of MI (not involved in suit) shut down their chamber

Undisclosed settlement rumored at > \$ 6 M

Maceday Lake (Pontiac, MI)

Diver found 85 ffw

1200 psig in cylinder

45 pounds of lead on weight belt

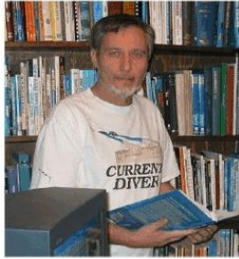
Sand/rocks found in bc hose



Jury awarded \$ 5.9 M, plus \$ 1.9 M, plus costs

Your Diving Resource

Welcome to



Diving Myths & Realities
by
Larry "Harris" Taylor, Ph.D.
a.k.a. "River Rat"
a.k.a. "Divegeek"

Diving Safety Coordinator
University of Michigan
Ann Arbor, Michigan

Email: divegeek



Tm

My students tell me that I do NOT teach scuba. They say I live and preach the "Gospel according to "Harris":"
"In all diving situations, the knowledgeable, physically fit diver has more fun!"
This site is assembled in the spirit of that gospel.

Go To: [About "Harris"](#) [Articles](#) [Slides](#) [War Stories](#) [Editorials](#) [Links](#) [Finis](#)

[University of Michigan Personal Home Page](#)

[About "Harris"](#): Background info, logo & names, and photo gallery

[Dive Articles](#): Articles spanning more than four decades of teaching

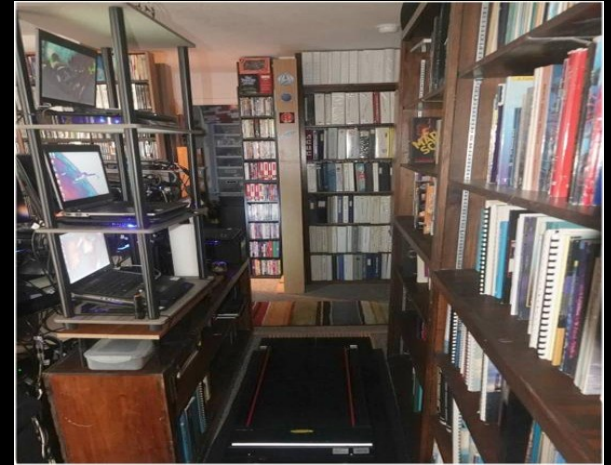
[Slides](#): Lecture slides on specialty topics (in PDF Format)

[War Stories](#): Short presentations used as teaching examples

[Editorials](#): Personal opinions & observations

[Links](#): My entire collection of ~ 9400 links (contains ~ 1200 diving links)

[Finis](#): [Dive Long & Prosper](#)- My traditional closing salutation



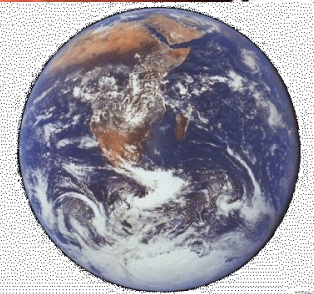
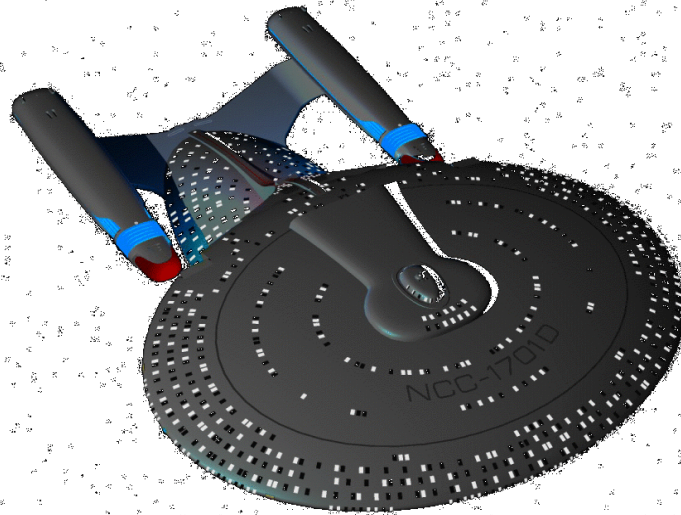
LPT

<https://websites.umich.edu/~lpt/Divegeek/home.htm>
divegeek@earthlink.net

Observing the rules Reduces risks to all



Dive long & Prosper!



LPT