

Don't XXXX On That Rope!

In 2001, a presentation titled "How Much Does It Really Matter" examined the effects of various common chemicals on rescue ropes. This entertaining and enlightening presentation is a continuation of that research, focusing on additional contaminants not addressed last year.

About the Presenters

John McKently has been School Administrator and Lead Instructor at CMC Rescue School for the past six years. He teaches rope, confined space, tactical rappelling, and other specialized courses such as rescue for stage and arena riggers. For the 20 years prior to his employment with CMC, McKently was SrVP in charge of Facilities at a mid-size bank. He has served with Montrose SAR for 28 years, where he served as Team Captain for seven years before being promoted to Commander. He has over 1500 rescue operations to his credit. In addition to his work at CMC, he is rated as a Senior Fire Instructor by California State Fire Training and as a Mine Rescue Instructor by MSHA. He occasionally teaches Search Management for California OES and "has no life."

Bruce Parker is Senior Lead Instructor at CMC rescue school, a position he has held for eight years. For the four years prior to his work at CMC he taught rescue for another training company. He is responsible for course development and compliance with applicable standards such as NFPA 1670. Bruce is extremely concerned with rescuer and victim safety and has worked to develop or improve many of the products manufactured by CMC. He is rated to teach mine rescue by MSHA and is a State of California Senior Fire Instructor. Through ASTM Bruce has written several standards relating to SAR. He has been a member of the Montrose SAR team for 21 years, serving in all ranks including 2 years as Captain. He continues to represent the team at Regional MRA meetings.

Don't _____ On Your Rope

In CMC Rescue School classes we are constantly being asked about the effect on rope of chemicals commonly found in emergency response or industrial settings. Our findings were presented at ITRS 2001 in a program titled "How Much Does It Really Matter."

After that presentation we received suggestions of contaminants for additional testing. One of those was "rescue tool fluid." Upon investigation we found that it was brand dependent. To be fair we had to test all three types. The suggestion of gasoline and diesel fuel came from several different sources. Representatives of one large fire department in Southern California have called at least three of us at CMC asking about the effects of those on their harnesses and webbing. The story changed with each telling, once it was a gas can that tipped over and spilled, once it was chain saw (oil mix) fuel and once it was diesel. In all cases there may be fuel additives that could harm synthetic rope that are unique to a particular brand of fuel or admix. The callers didn't know the specifics so we used what we had available. Please remember there are a lot of options and there is a limit to the amount of testing we could do.

Ammonia got on the list because we received a call from a window washer (not a former student) that sounded as if he was still on a scaffold hanging on the side of a building. He was very concerned about the ammonia that had just spilled on his safety rope and wondered if he was OK to use it for the rest of the drop.

A few individuals questioned bat guano/urine. Were they cavers? Climbers who made multi-day climbs? We weren't really sure. So we made a few assumptions and did the best we could with that one.

In all cases we thought we knew the correct answer to the question but we hadn't actually tested it ourselves. We wanted to be able to answer with facts rather than making assumptions or perpetuating some of the rumors.

As you will see in the following slides, most of the contaminating materials had little, if any, effect on the strength of the rope. Please remember that there are many variables and these results should only be used as a guide. Please contact us if you have suggestions for future testing.

Don't _____ On Your Rope

Presented by
John McKently & Bruce Parker
CMC Rescue School
ITRS 2002

Review of 2001 Tests

- Rope Markers
- Duct Tape
- Battery Acid
- Bleach
- Water
- Asphalt Roofing

Previous Test Results

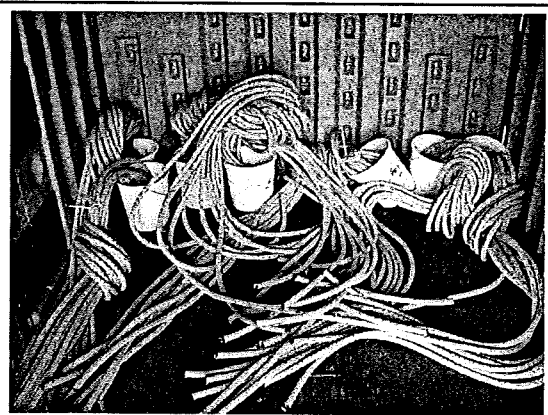
- BlueWater Nylon Marker 0% Loss
- Sanford Magnum Marker 0% Loss
- Duct Tape 0% Loss
- Battery Acid
 - Immersion (nylon/nylon) 35% Loss
 - Wipe (nylon/nylon) 1% Loss
 - Wipe (polyester/nylon) 42% Loss

More Results From 2001

- Chlorine Bleach
 - 100% 14% Loss
 - 10% Water Dilution 0% Loss
- Water
 - 30 Minute Soak 2% Loss
 - 3 Hour Soak 18% Loss
- Asphalt Roofing 4% Loss

2002 Contaminants

- Hydraulic Rescue Tool Fluid
- Diesel Fuel
- Gasoline
- Ammonia
- Bat Guano/Urine



Test Parameters

- New 13 mm CMC Rescue Lifeline
 - Nylon/Nylon Kernmantle 42.21kN MBS
- 5 samples of each
- Approximately 6” in the center of each sample was immersed in contaminant 4-5 weeks or until contaminant evaporated
- Cordage Institute slow pull test method

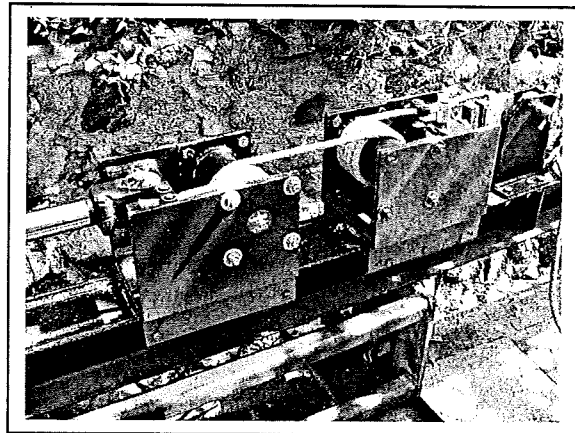
Hydraulic Rescue Tool Fluids

- Three Types of Fluids:
 - Phosphate Ester (Hurst)
 - Mineral Oil (Amkus)
 - Diethylene Glycol (Phoenix)



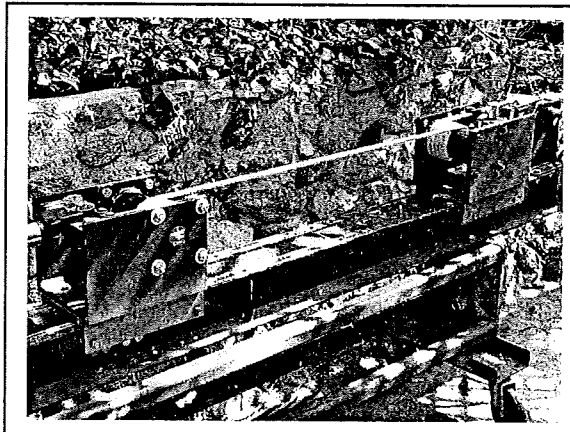
Control Samples

- 42.21 kN Minimum Breaking Strength per tag attached to the rope when shipped
- 44.66952 kN Average Breaking Strength of our five samples




Hydraulic Rescue Tool Fluids

- Phosphate Ester (Hurst) fluid
 - Average 44.37972 kN =.65% Loss
- Mineral Oil (Amkus) fluid
 - Average 45.20756 kN =1.19% Gain
- Diethylene Glycol (Phoenix) fluid
 - Average 44.67926 kN =.02% Gain



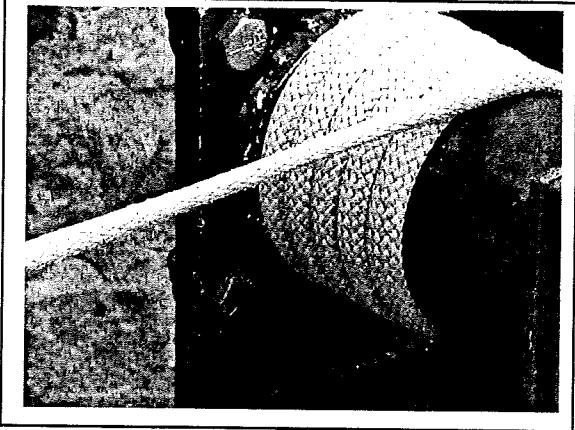
#2 Diesel Fuel
(Arco Green ECD 1-Ultra Low Sulfur)

- Average 43.61548 kN =2.42% Loss




Unleaded Gasoline

- Average 45.25236 kN =1.29% Gain



Ammonia
(Ralph's "Pure" liquid)



- Average 41.79546 kN =6.88% Loss

Urine

- Average 39.06042 kN =14.36% Loss



The Usual Cautions and Disclaimers

- The reported results are based on a limited amount of testing
- Results may vary with different rope construction and/or materials
- The length of time the rope was exposed to chemical contaminant may change the outcome

The Tests Continue...

What have you been doing to your rope?

ITRS 2003

- Sun Block
- 100% DEET
- ?
- ?
- ?
- ?
- Webbing Tests

