The Challenge

Off we go
Another year
Our ultimate goal
Was very clear
Practice by day
In the books at night
Chicago bound
We'll put up a fight
The Godfather, Sharon
Slim and Bern
We're going to show
What we have learned
Backed by our coach
Vicki's her name
She'll try to keep us
In focus and tame
And John the Bushman
Team manager you know
Keeps us on time
Where ever we go
Representing New England
Is also another team
There known as Mass Mutts
Got a lot of steam
The windy city
At last we have come
Both teams together
You'd think we were one
As the event grew closer
It was the night before
All packed in a room
Barefoot on the floor
Aughum'in and Haaa'in
The yoga technique
Were told to relax us
Don't feel like a freak
Up at dawn
Well actually before
Nerves in check
I'll study some more
Thanks - Slim

NOW TIME FOR THE CHALLENGE!!

All Coaches and Teams
Thousands of people
The hall packed to the seams
Then all of a sudden
My hands were all thumbs
My legs wouldn't move
I think they were numb
We gathered both teams
For a quick Aughum
That stuff really works
Lets have some fun
Through out the day
Competition was strong
We couldn't afford
To do anything wrong
The Lab collections
And safety were done
Now to process
Our favorite one
Then pump maintenance
Was the last to do
Results come later
Lets go for a brew!!!
It's finally time
To hear the names
Of the winning squads
Of our Olympic games
My jaw hit the floor
When I heard them say
*I In Process
In the USA!
Forth place in the country
I must yell
With all your support

We gave it Hell!!

Thanks - Bern
Nitrification Seminar at the Hampton WWTF

Wes Ripple of the NHDES Operations Group and Steve Clifton of Underwood Engineers, Inc. recently put on a half day seminar on nitrification for the Hampton WWTF staff. The Town of Hampton recently received new NPDES permit limits for total ammonia on a year round basis. The new limits include 1.05 mg/L in the summer and 2.14 mg/L in the winter. The plant staff acted quickly and started to met the limits in July, two months before becoming necessary. The Town's chief operator, Mark Lavoie, was pleasantly suprised with their success and was interested in having a training session for his staff. The seminar covered the impacts of ammonia on the receiving stream, process design and control, a microscopic examination of Hampton's and Keene's activated sludge, a comparison of the Keene and Milford WWTF processes and typical operational problems.

Overall the seminar was a success and a lot of interest and questions were generated to keep the operators challenged.

Good Luck Hampton!

Winter Meeting

December 15, 1994
Sheraton Wayfarer, Bedford, NH

This year the Board of Directors of NHWPCA has decided to change the format of the winter meeting. Rather than freeze your tail off at a treatment plant, you can learn more about plant safety and NPDES permitting in a nice warm room at the Sheraton Wayfarer.

Schedule of Events

10:00 - 11:45 Technical Sessions (concurrent)
11:45 - 12:30 Attitude Adjustment
12:30 Buffet Luncheon
A Taste of Italy
Italiano Buffet
featuring: Fettucine Alfredo, or Marinara, Sausage/Peppers/Onions, Chicken Parmesan, Garlic Bread, Soup, Salad and Dessert!
1:30 NHWPCA Business Meeting, President Ken Kessler presiding.
Guest Speaker: "Santa Claus"

For further information contact Lorraine Sander at 594-3365 or ?

Season's Greetings

Technical Session A. Safety, What's The Big Deal? (Attendees will earn 0.2 CEUs)

Why safety should be important to you from the viewpoint of an operator, an insurance company and a regulator?

★ Larry Untiet, Ashland WWTF
★ Jonathan Kipp, Compensation Fund of NH
★ Dave May, OSHA

Technical Session B. NPDES Permitting - Read the Fine Print! (Attendees will earn 0.2 CEUs)

What's involved? What do you really have to agree to? What is the procedure like for all participants?

★ Jeff Andrews, NHDES
★ Donna Trask, City of Keene
★ Al Firmin, CDM
Our Aging Plants

Dana L. Clement, Suncook WWTF

It has been over twenty years since the passage of the 1972 Federal Clean Water Act. Just as many of us are showing those decades signs of aging, so are most of our treatment facilities that were built so long ago. Along with that, those nice fat federal and state grants to construct new facilities are all but a memory. As such, we operators try to keep the financial burden of compliance with the CWA to a minimum by trying to extend the life of our existing facilities, as opposed to constructing more expensive new ones.

One of the major components to most treatment facilities is concrete tanks or basins. Although one may think these monstrous units will last forever, the opposite is most likely true. The materials flowing through these tanks can have a substantial effect on their integrity. The most notable effect at our facility was in the chlorine contact and aeration basins. Within these structures small “stress cracks” had begun to surface at various locations. There was also a great amount of exposed aggregate throughout the units, particularly below the water level. Closer investigation revealed significant deterioration of the concrete itself.

We had made previous repairs to concrete basins by sand blasting and coating with a “Coal Tar Epoxy” and had achieved marginal success with this process. With this in mind, bids were solicited to reline the remaining units normally used for our process. The bid proposals were to include complete sand blasting, “sack rubbing” (to fill all voids), and application of the coating product.

ProCoat Inc. was awarded the contract and upon inspection of the tanks suggested using a different system called CIM 1000. This product, (which is applied to a 60 mil thickness as opposed to 20 mil for Coal Tar Epoxy), forms a rubbery, monolithic coating, which is waterproof. It has excellent chemical resistance, is impervious to hydrogen sulfide and withstands both acids and caustics. Unlike coal tar epoxy which is hard and brittle, CIM 1000 has an extension factor of 350% minimum, (ASTM D412), and won't crack if the underlying concrete cracks. The product is an asphalt extended urethane which is ultra-violet stable and is abrasion resistant. It is repairable by plant personal if cut or damaged and can be applied by conventional brush, roller, and spray methods. When shown a sample of CIM, I was impressed with its strength and elasticity. When I inquired as to it's adhesion, I was informed it can’t be removed with a sand blaster. The deciding factor in choosing this method was cost. In this case, the product could actually be applied for less than the coal tar epoxy.

According to ProCoat Inc. “CIM 1000 has been used nationwide for many years in a variety of wastewater tanks and other containment structures”. Furthermore, “although the manufacturer is located in Peterborough, the Suncook project is the first large scale use of this product in a municipal wastewater plant in New Hampshire”. The application was conducted in a good and workmanlike manner and in conformity of confined space regulation. One concern I had was hydrostatic pressure from adjacent tanks but it appears the CIM application eliminated all inter-tank infiltration. The finish-

Temperature Blanks, A View From The Lab

By Beverly Baer Drouin, Laboratory Director
The Scott Lawson Group, Ltd.

A strong field sampling program is made up of many components. One of these components is documentation of sampling, preservation, handling and storage of the sample. Samples that require storage at 4 degrees C. must be cooled immediately upon sampling and stored with ice packs, ice or a refrigerator. The storage temperature of the sample should be documented by the Sample Custodian.

Many laboratories, when providing the customer with a sampling kit, will include a temperature blank. This small glass or plastic vial contains deionized water. The temperature blank accompanies the samples in storage and transit to the laboratory. Whether the samples are hand delivered or sent by commercial carrier to the laboratory, the temperature blank is packaged with the sample. The laboratory will measure the temperature of the sample upon receipt and document this data on the chain of custody.

Note: when samples are shipped with coolant material (e.g., blue ice packs or ice), it is necessary to pre-chill the samples and temperature blanks with ice or the refrigerator prior to shipment.

UPDATE!

Someone with a quick eye spotted the typo in the September issue of The Collector. Table I, Recommendation for Sampling and Preservation of Samples According to Measurement should state:

<table>
<thead>
<tr>
<th>Measurements</th>
<th>Vol. (ml)</th>
<th>Holding Container</th>
<th>Preservation</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil &amp; Grease</td>
<td>1,000</td>
<td>G</td>
<td>Cool, 4°C</td>
<td>28 Days</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>H₂SO₄ to pH:2</td>
<td></td>
</tr>
</tbody>
</table>

ed appearance of this product is not eye appealing, but appears to be an extremely durable long lasting line.

The extended asphalt urethane linings at the Suncook Wastewater Facility is an option that may be of interest to any NHWPCA member who wishes to extended the useful life of their concrete tanks and basins. I would be happy to discuss our application with any interested party. Call at (603) 485-2027. The distributor for CIM 1000 is Scalpro, Inc. 8 Priscilla Lane, Auburn, NH 03032, Tel. (603) 669-8786

Boston Marriott Copley Place Hotel Boston, MA

Mount Washington Hotel Bretton Woods, NH
Understanding and Controlling Nocardia

By Wes Ripple, NHDES

Many activated sludge plants have experienced foaming problems at one time or another. There are several different types of foam, and in order to find the cause the foam type must first be identified, either by visual observations or through microscopic analysis. Foams can range from the classic billowing white clouds often associated with low mixed liquor solids concentrations to the old sludge foam consisting mainly of dead cell bodies. Foaming can also occur as a result of a nutrient deficiency and will generally have a sticky, polymer type consistency to it. This is most often found in industrial treatment systems or in domestic plants treating a high percentage of industrial wastes. Nitrifying activated sludge plants will sometimes produce a thin film of brownish to black scum often covering the whole surface of the secondary clarifiers. This is usually the result of denitrification. Most of these foam types rarely cause long lasting operational problems and are relatively easy to identify and cure.

There are some foams, however, that can affect the entire operation of the plant and are difficult to control. These are the filamentous bacteria foams, most notably Nocardia. This type of foam requires a microscopic exam and staining procedures to verify the bacteria’s existence.

Nocardia are short, branching filaments that stain Gram positive. The staining is easy to do and is a dead giveaway. This filament is capable of producing a very thick, dirty looking foam on the surfaces of aeration tanks and clarifiers, often described as resembling an unappetizing chocolate mousse. It can create numerous problems beyond being not pretty to look at. The foam, under the worst possible conditions, can overflow aeration basins, covering walkways and engulfing anything in its path. This not only leads to safety hazards from the slippery material but also requires labor to clean up the mess. A severe Nocardia bloom can result in effluent TSS and BOD violations, most directly related to foam escaping the secondary clarifiers.

Process control can become difficult, too. Many filaments interfere with sludge settling; nocardia does not, due to its short length and the fact that it is found almost entirely within the floc. What does happen, however, is that many of the treatment solids get trapped within the foam. This creates problems with controlling solids inventories. Researchers have determined that up to 40-45% of the MLSS can get lost to the floc.

Freezing conditions in the winter can make foam removal almost impossible. There are documented cases where foam froze on the clarifier surfaces, jamming the scum removal equipment and rendering the rake arms inoperable. Warm summer temperatures can also make the foam quite odorous.

Unfortunately, not much is known about why Nocardia grows in the first place. The literature states that is is a warm temperature filament, requiring at least 14-18 degrees C for foam to occur. This seems to contradict the previous paragraph. Everybody does appear to be in agreement that it is a very slow growing bacteria, thus it will most often be found in systems operating at low F/M and MCRT’s of at least 9 days. It used to be thought that Nocardia growth was enhanced by high oil and grease (O&G) concentrations. It now appears there is more to it than that. Many plants have experienced foam problems with very little O&G. Most researchers now believe that Nocardia can grow on a variety of foods, such as simple sugars and even dead cell material. One researcher successfully grew Nocardia on a diet of just pesticides alone. It is still recommended to keep your O&G levels to a minimum because both Nocardia and O&G float. The ability to float gives Nocardia selective access to this food source.

Recent evidence (sometimes conflicting), also suggests that mixed liquor pH has an effect on the organisms. Laboratory studies show that the optimum pH range is between 7 and 8.5. Several nitrifying plant have reported reduction in foam coverage when the pH was allowed to decrease to 6.4-6.5. It is also believed that excessive sludge blankets in primary clarifiers helps to promote the growth of these organisms.

The foam itself can be made worse by the presence of surfactants (detergents or industrial cleaning compounds). These substances help to stabilize the foam, making it more difficult to breakdown. High air flow rates also serve to puff up the foam layer and eventually results in the stripping of more Nocardia organisms from the mixed liquor. One method of minimizing the bubble size within the foam and controlling the volume to some extent is by decreasing the air flow rate. In fact, lowering the D.O. will decrease their growth rate since they are strict aerobes.

The most effective control method to date is to waste them out of the system faster than they can reproduce. This means reducing the MCRT in most cases to less than 6 days. Some plants have found they need to go down as low as 2 days in order to eliminate them. Generally speaking, the higher the temperature, the lower the MCRT needs to be for elimination. This approach may not be acceptable for plants that are required to nitrify as the high MCRT’s are needed to sustain the nitrification process.

Chlorination of the return sludge is an often used (and tricky) tool for filament control. However, this approach does not work well with Nocardia because the filaments are usually buried within the floc. A very high dose must be applied in order to ensure that the chlorine penetrates deeply enough to reach the organisms. The required dosage then becomes toxic to the beneficial bacteria. A safer approach may be to apply the C12 solution as a fine spray directly onto the surface of the aeration tank. One plant incorporated the spray nozzles within a specially constructed spray hood. The foam would pass underneath the hood and receive a dose of C12. On most occasions the foam was eliminated within 1-2 days without losing any treatment efficiency.

Foam wasting is another measure that may have some merit. Here, the foam is removed from the system either through physical means or by diverting it to an empty tank. The foam can then be dewatered. This has been done successfully in several instances. The idea is to get rid of the foam before it has a chance to reseed the system.

The use of selectors is proving to be a viable method for Nocardia control. A selector is basically a mixing zone for the aeration tank influent and the RAS (more on selectors in the next issue). Mixed results have been obtained from aerobic selectors. In one small scale experiment it was found that Nocardia was controlled at an MCRT of 5 days but not at 10 days. Current research using anoxic selectors shows that this approach may be more reliable. Nitrification and Nocardia growth often occur at the same time because both require high MCRT’s and warm temps. Nitrification produces nitrates, which allows the opportunity to denitrify in an anoxic zone or selector. These filaments denitrify much slower than the floc forming bacteria, thus will not compete well in an anoxic environment. One research project proved that by keeping an extended sludge blanket in the secondary clarifier enough denitrification took place there that it totally eliminated all Nocardia filaments.

While there remains much to learn, I hope this gives you something to think about the next time you see foam spilling over your sidewalk!
Franklin Pierce College
WWTF Upgrade

By John Currie

In mid-October of this year, Franklin Pierce College took a brave step into the future as they started up their completely new wastewater treatment facility. Designed and now operated by Whitman & Howard, the new facility is light years ahead of the system it replaces, from the technology employed to the mode of operation. With a design flow of .14 MGD, the plant packs a high degree of treatment into a remarkably small footprint. The plant’s startup marks the second implementation of Rotating Biological Contactors in New Hampshire, Plymouth being the first. The main features of the plant are its two banks of 4-stage RBC’s, primary and secondary clarifiers, sedimentation tanks, sand filtration, and UV disinfection. It also employs an interesting automatic screening unit, which looks like a typical grit screw but removes and dewateres coarse screenings from the influent flow. Provisions for sludge handling include aerated holding tanks, sand drying beds, and built-in connections for liquid sludge disposal.

The original plant was based on package contact stabilization systems, and had been incrementally upgraded over the years to try to keep up with the pace of regulation. Although the facility has not yet received its latest discharge permit, it was clear that any more stringent requirements, or expansion of the College, could not adequately be handled by the old plant. The facility’s receiving water is a sensitive one—a relatively small pond which has been closely monitored by citizen’s groups and the State. The plant’s flow characteristics are also challenging—come winter and Christmas break, the operator is met with a sudden 75% drop, in flow and loading, in subfreezing weather. The first encounter with this situation can be a shock...

The current operator, Jean Pierre (John) Roberts, will hopefully have enough time to play with the vast array of new controls before this shock hits. John has had the good fortune of being at Franklin Pierce during the new construction and demolition of the old. He also has the backing of the designers, Whitman & Howard, as he was hired by them when they took over operation from the previous contract operator, W.F.F. and Associates. Best of luck to John, Franklin Pierce, and Whitman & Howard. We’ll be reporting on the new plant again when construction is complete, and hopefully all the Association members will get the chance to visit this fascinating new plant in the coming months.

Looking down on the effluent channel with the U.V. Unit.
The Synergetics of New Hampshire, along with the Massachusetts Mutts, represented New England in the national Operations Challenge event held in Chicago on October 18, 1994. For the Synergetics, this year was a more pleasant experience than last year. There was good camaraderie and mutual support between the two teams as well as a good turnout of supporters from NEWEA at the event.

1994 was an entirely different experience from the turmoil of 1993. The first year of the national Operations Challenge, we succumbed to nervous tension, loosing some of our focus and confidence. In light of this realization, during this year’s practices we learned to “visualize” and we rehearsed breathing for relaxation. We had to improve our performance in most of the events and a lot of time was spent evaluating the most efficient ways to do things while focusing on relaxing while doing the events quickly.

Once in Chicago, despite all of our efforts, some of the tension felt last year returned. A NEWEA member from Maine, Charlene Powell, was good enough to lead the two New England teams in a yoga session to relieve tension on the night before the “big” day. Some had to be tricked into attending the meeting, being told that it was a strategy session, but all ten team members removed their shoes, swallowed their vanity and participated. The ultimate outcome was a feeling of New England unity because we had all “contorted and stretched” together. This sense of togetherness carried over to the next day’s competition and both teams were genuinely concerned with one another’s performance.

The laboratory exercise was our first event. We each perform a lab procedure unassisted. Although two minor penalties were assessed, we felt we had done well. This is one of the events in which the teams are left in the dark about the scoring, so there is no way to compare with other teams. The Collection System event was next. We had spent the most practice time on this event and we were confident that we had a new approach that was much better than any in the past. Everything went beautifully and we were very happy with our raw time. However, the repair failed the pressure test and we were assessed a significant time penalty. Last year this type of setback would have sent us into a tailspin, affecting our performance in subsequent event, but we were able to snap out of it quickly this year. This may have been due to the judge telling us that it was still a very good time and hearing our supporters cheering us on. We quickly went on to the Process Control session. This is another “black box” type of exercise. Teams are paraded off to a remote section of the convention hall and stuffed into little cubicles to sweat out the written exam. When the team stuffs the exam and answer sheets back into the manilla envelope the stopwatch is stopped. We did not know how we had fared, but we were pleased with our time. There was a long wait until we were scheduled for the Safety event. We used this time to watch other teams perform and hooted and hollered for the Mass Mutts during some of their events, as they had done for us. During the Safety event, we felt great about our coordina-
tion and logged in our best time yet while avoiding any penalties. We then moved onto the Maintenance event. This was a new event for 1994 and we had been shadow practicing for it because we didn't have the exact pump setup on which to work. Considering that it was the first encounter with the real thing, we did just fine. We had a few stupid penalties like not returning a wrench to the proper slot in the case and a motor fan cover rotated by one bolt hole, but we couldn't complain, particularly after facing a complete disaster in this event last year.

Just like that, seven hours had passed and it was Miller time. All the teams dispersed for the remainder of the afternoon and then reassembled again in the evening for the awards and to find the final team standings.

There were two dominant teams that essentially won all of the trophies. The top team overall was the L.A. Wrecking Crew from California, taking home second place trophies in three of the events as well. The Hampton Roads team from Virginia took first place in four events, yet placed second overall. The awards ceremony was pretty boring because the announcements were only for the top two finishers in each category. The crowd became conditioned to expect only these two teams as winners. Process Control was the last of the individual events to be announced, and the second place finisher was awarded first to guess who - yes, the L.A. Wrecking Crew. Everyone was shocked to hear that first place was awarded to New Hampshire! No one was more surprised than we, the Synergetics, as we immediately became ecstatic, to the point that none of us remembers how the crowd reacted. We were so happy that we were overcome with proud emotion and we lost the presence of mind that we had worked on so hard during practice. This time it seemed appropriate to get unconscious with happiness because last year we finished in second place in the same event just six seconds away from the winner.

Winning a first place trophy was exciting enough but only after the awards ceremony was over did we find out that we had placed fourth overall. We were very, very close to the third place team. Suddenly all of the precompetition anxiety seemed worthwhile. Our placement in the other four events were as follows: third in Safety (one second behind second place); third in Lab; fifth in Maintenance: and ninth in Collection Systems. All of the time spent practicing was worth the reward and, yes, talk of doing it all over again next year began circulating (this was the one thing we certainly were not going to do).

The bottom line reality finally struck us this year, Synergetics members really like one another and enjoy functioning as a team. The successes this year as well as the disappointments last year have not changed the spirit of the team and it is very difficult to allow that kind of feeling to dissolve. We enjoy competing, we realize that it takes patience as well as perseverance and experience to get good at Operations Challenge (but this is no different than anything in life), and we were able to make new friends and renew some old acquaintances. The whole experience was a big positive for us and really seemed to capture the reason for having the Operations Challenge - to get wastewater operators from across the country interacting together, to cheer one another on, to test skills, and to simply have a good time. Maybe the best example of this was the team from Hawaii. The four team members lived and worked on four different islands and had to spend $100 each to get together for practice. They had one practice before the Chicago national event.

Team Synergetics came home feeling good about the Chicago experience. We wish to thank all of those moral and financial supporters who made it possible for us.

At the Lab Event - Kick back

Synergetics OHMMM!!!
Operations Challenge
The lively side

By Slim Lowe, Captain

The Challenge competition is full of highly skilled people from all over the United States, competing against other teams to be the best in the nation, this alone says that the level of competitiveness is very serious stuff. In this type competition, not only does a team need to be serious, but have fun along with it.

In Chicago, the teams from New England, proved that you can be focused and have fun doing it. It all started with the Collection System event. Two teams compete head to head in cutting out a broken section of pipe and replacing it with a service saddle while water flows through the pipe being repaired. This is a fast paced exercise - no time or room for error...or so we thought.

Ken Kessler and Mark Bernier were cutting with lightning speed, while Slim Lowe and Sharon Ostrander, drilled the hole for the service saddle with total accuracy (so it seemed). The repair was made in our best time ever! Then came time to test for leaks. We all stood there waiting for the pipe to be pressurized and low and behold a gusher erupted like a volcano from the service saddle, which added a minute penalty to our overall time and put us out of contention, but we kept our focus and it did not bring our spirits down, as a mistake like this would to a rookie team. But being seasoned vets...we took the penalty and went on to the next phase of the competition.

The Safety Event. This event consists of testing for dangerous gases, rescuing a victim from a manhole, and performing CPR. Before our team climbed the stairs, we joined hands along with our coach and said a prayer, we asked for "Air Conditioning", boy it was hot in that place!! (AMEN). We started up the steps of the platform to get down to business, and to wait for the judge to yell go!! Ken K. and Slim L. worked feverishly to extend the legs on the tripod and get it set up over the hole with out knocking Sharon O. in while she tested for gasses. We didn't want to rescue Sharon instead of the victim. At this point, Mark B. is putting on a full body harness getting ready to enter the hole carrying a spare harness for the victim in the hole, which we were glad was not Sharon O. While Mark B. was in the hole putting the harness on the victim, the crowd was looking on. When the victim was retrieved, Sharon O. and Slim L. performed CPR on the victim. By the time they were done, Mark B. and Ken K. had taken down and returned all the rescue equipment and the event was over. The judge went over the procedures and we finished with no penalties, but later found out while Mark B. was putting the harness on the victim, someone took a picture of his copping a feel, later to be used as black mail...Mark B. is still sweating over those pictures.

After that it was on to the Lab event. This event is where all team members must individually complete a lab procedure. All went well except for two penalties. Slim was hit for not mixing the formula, he pleaded his case about his hands shaking so bad, he thought that it was being mixed well enough, but to no avail. So he took it in stride and bowed out gracefully. Along with that Ken K. was penalized for an air bubble in his pipe, there was no pleading his case. So he blamed it on the bad food the night before. This was not a huge set back in our scheme of things, we placed in the top five in this event which kept our spirits high so we could move on to the next event.

Process Control. The testing of the minds. Wow! What a scary thought. So we gathered our things and we were escorted off to the far side of the competition hall, knowing that this could be our big moment to shine. You see, the longer you work in wastewater, sludge sticks in your mind. Getting in that cubicle isolated from everyone, knowing sludge was our strong point. As the clock started, we found ourselves knee deep in the stuff...but we managed to work our way through it all. As we finished the exam we got up from the table to wipe the sweat from our brows and exited - stage right, with a good feeling of accomplishment. In this event a team doesn't know its score until the end of competition. We didn't think about it and went on to our last event of the day - which was the Pump Maintenance.

We gathered our composure and went back to the arena. The Synergetics and the Mass Mutts competed head to head once again, so the two teams formed a large circle and relaxed thinking back on a yoga class we attended the night before and decided to do our Famous Warrior Cry (HAAAAA)!!! This confused the on lookers, but we knew that this was war and the cry we let out was appropriate, as this is another fast paced event. When the smoke cleared, the judging began, one of the judges walked to the back of the pump and returned with a puzzled look on his face, so the captain asked what was wrong and the judge led him to the back of the pump to show him the fan guard on the motor drive, it seemed that the hole where you grease the motor was on the opposite side of the grease fitting. The captain knew that this was an oversight but replied to the judge, "in a case like this, at the plant, we would grab that special grease gun with the snake like hose and it would find its way to that hidden grease fitting." The judge was not buying that line of sludge, he looked at the captain, scratched his head and said "yeah right!!" Well we tried, so only a small penalty was assessed.

The team knew that this was the last dance of the day and then it was Miller Time. So we bowed out gracefully. It was over. The fat lady had sang her song. Time to wind down. So we gathered our things and headed back to the hotel to get ready for the award ceremony. Heading back we were admiring the city and its beauty. It's diversity of people strange and otherwise. For instance, walking across on one of the city's many bridges, we encountered a man standing looking down in to the water below. As we walked past him he asked the Captain, "hey brother, if I were to jump into the river would you throw me a life preserver?" Being exhausted from the day's events, the captain said,"if you're crazy enough to jump he would throw him a brick to help him sink." After that we kept walking never to see that person again (Oh well "Sludge Happens")

Time has passed, the team has cleaned up and now ready for the award ceremony. When we entered the room the energy from all the other teams was overwhelming. Anticipation over came us as the event went on & on & on & on - 2nd - 3rd - 4th place trophies had been awarded. Nothing yet for the Synergetics. We were feeling a little low in spirits but the Spirits were flowing smoothly and then we heard the announcer,"first place over all for Process Control, The New England Synergetics!!"
Developing a Confined Space Entry Program

By Brian Duplessis, Industrial Hygienist
Scott Larson Group

"On July 23, 1985, a city worker was removing an inspection plate from a sewer line in a 50-foot deep pump station, when the plate blew off allowing raw sewage to enter the room. Two fellow workers and a policeman attempted to rescue the worker from the sludge filled room and were unsuccessfull. All four were dead when removed from the pumping station."

The preceding excerpt is from a National Institute of Occupational Safety and Health (NIOSH) pamphlet on safety in confined spaces (Publication No. 87-113). The excerpt demonstrates that performing work in confined spaces can be extremely hazardous and that improper confined space entry and/or rescue is responsible for numerous fatalities and serious injuries each year. When OSHA implemented its Permit-Required Confined Space Entry Standard in January of 1993, it estimated that the standard would save over 50 lives and prevent 5,000 serious injuries a year.

The first step in developing a program for Confined Space Entry (CSE) is to conduct an evaluation of the workplace to determine the location and hazards of any potential confined spaces. A confined space has limited or restricted means of entry, is large enough for an employee to enter and perform assigned work, and is not designed for continuous occupancy by the worker. These spaces may include underground vaults, tanks, silos, storage bins, pits, diked areas, and vessels.

A permit-required confined space is one that meets the definition of a confined space and has one or more of the following characteristics:

- Contains or has the potential to contain a hazardous atmosphere.
- Contains a material that has the potential to trap a person.
- Has an internal configuration that might cause a worker to be trapped or asphyxiated by inwardly converging walls, or by a floor that slopes downward and tapers to a smaller cross section.
- Contains any other recognized serious safety or health hazard.

If the evaluation of the workplace reveals that confined spaces are present, then a program designed to allow safe entry and work in the confined spaces needs to be developed.

The program needs to contain all of the elements necessary to protect workers from the hazards posed by confined space entry. The program must also be specific to the workplace and broad enough to cover every potential CSE situation.

A company has several different options in developing a CSE program. If a company has a knowledgeable safety person on staff, they can develop and implement the program in-house. If a company doesn't have the luxury of a safety professional on staff, then they can contract an outside Safety and Health Consulting company to design the program, conduct the training, etc. Another option is a combination of the two; a company can develop and implement the CSE program and then have an outside consultant review the program for effectiveness and assist in implementing necessary changes.

If a company has any doubt regarding the effectiveness of their safety programs, it is a good idea to consult with experts. In addition to private safety consulting firms, agencies such as OSHA, or organizations like State Safety and Health Councils can be excellent resources.

Whichever means a company uses in establishing a Confined Space Entry Program, it is important that the end result is an effective program that protects workers from death or serious injury.

NHWPCA Synergetics
Thanks To Our Loyal Sponsors

ITT, Flygt Corporation
Red Hed Supply
JPEX, Inc.
Anderson Livingston
Dufresne-Henry
Woodard and Curran
Weston and Sampson Services
Utility Pipeline Service
Mast Association

OMI, Inc.
CDM, Inc.
City of Nashua, N.H.
Coca-Cola, U.S.A.
N.H. Water Resources Division
Town of Greenville, N.H.
Town of Sunapee, N.H.
City of Concord, N.H.
Town of Warner, N.H.

A Team Is The Sum Of Its Members

By Jay Pikiell

I have watched the Synergetics grow from its infancy, from a thought, to a team taking first place in an international event. It has been a long road which would have been unthinkable without the support of their mates. There were long hours of study and practice, along with the disappointment that comes from defeat, which was shared by all. The feelings of victory and success made it all worth while.

Although I was unable to attend the event recently held in Chicago, I did go to Anaheim, the previous year. It was amazing to watch all these people compete, showing their skills. The team work and intense pride taken in knowing what one can do and doing it fast, without penalties, showed in the members faces.

The activities have given me a greater respect for what the job entails and the people who do it. I take pride in knowing it took families to work as a team and would like to thank those who made it possible.
Communications in Safety (part II)

By Scott MacDonald

CFR1910.146 states "insert quote here". This means you must have a viable means of communicating between a confined space entrant(s) and the attendant for that confined space. This can be as simple as tugging on a rope or yelling to each other but, what about the more complex entries? Have you got a convoluted entryway with a high level of background noise? What do you do?

CFR1910.146 also states that "insert quote here". This means that you must have a fast and reliable way of summoning help if something goes wrong during the entry. This is okay if your entry is "in plant" or a populated neighborhood but what happens if you're doing an entry at a remote siphon chamber for a river crossing? Well, you'd probably use a radio to talk to each other and to yell for help if you needed it. What's that you say? You don't have a radio system yet and you're thinking of making out a requisition for one? Okay, here's a few things you should think about when selecting a radio for your system.

When it comes down to it, a radio is a radio is a radio, right? WRONG!! When considering a choice of radio hardware, what you choose can be just as important, if not more so, as how effective and efficient you are at using it. When you're caught hanging upside down in a confined space while it's filling up with sludge, would you really want to rely on some dime-store captain video walkie-talkie set? I don't think so. The choice of equipment you make now will reflect on the depth of your foresight for years to come.

Now, let's assume you've already sat down and come up with a list of things you want in a radio system. A few of these topics would include (you've already done this so it's just a review, right?):

An idea of the distances involved between radios.
Do you need hand-helds or truck mounted or both?
How many base radios (for departments where offices are geographically separated)?
Do you have a repeated site?
Can you obtain business licenses?
Will the radios be used above ground, below ground or both?

and any other topics you can think of. These will help you and your dealer decide on the best equipment for your needs. Now this list looks primarily at the practical and technical sides of owning radios, but how about the safety aspects? By safety aspects I mean things like:

Is it safe to use in a hazardous environment?
Is it waterproof or at least water resistant?
Is it easy to use so that when you're caught with your pants down you can yell for help without possessing a Phd?
When the "@#$! hits the fan, is it loud enough to be heard through a containment suit or high background noise (like sirens)?
Does it have a lighted display so it can be read in dim or dark areas?
What kind of options can we get for it (throat mics and/or headsets)?
How about the recharge time? How is it going to look if you're trying to call your entry team from a pay phone because your radio is still in the charger?

Sometimes it's easy to get mired (read: overwhelmed) with the technical aspects of radio to the detriment of other areas.

If you're working in a sewage environment (remember when she wanted you to grow up to be a dentist or a proctologist?), you work with some dirty stuff (remember when your mom told you to always wash your hands?). This stuff (read: poop) is also corrosive and biologically active which poses somewhat of a threat not only to electronic gear directly, but to working with it in a sewage environment.

First off, let's look at a really important specification that's known as "Intrinsically safe". This label is usually given by underwriters laborotary (read: UL listed) and means basically that by using this equipment in a hazardous enviroenment, you won't pose a threat to yourself. For instance if you're walking around in a vault or pipe with methane present (read: check your gas detector), you won't blow your head off when you key the microphone switch (good feature to have, eh?).

Another good feature to have is "Environmentally sealed". This means that no gunk or goo from the surrounding area can get into the unit and do harm (read: corrosion) to it (read: expensive repair bill). This type of specification is harder to find than others.

These are just a couple of areas of concern to think about before you sign the requisition form for brand "XYZ" radios. Details like these, while they can be somewhat annoying (read: aaarrrggg!!), are what makes the difference between a usable, versatile piece of communications equipment (or any other piece of safety equipment), and something that gets left under the seat of the truck because:

"No one can figure out how to use, the battery's always dead, it's not loud enough, it got wet and now it won't work right, every time a pump turns on the static drowns out the signal, a friend used one of these and blew up the pump station with it, ad infinitum, ad nauseum, etc."

Note: If anyone has any questions regarding the use of radio in a safety program or otherwise, please feel free to contact me at 603-934-4032, 07:00 to 15:30 hrs on Thursdays and Fridays.

Ask The Operators

Q: Now that ultra violet disinfection has made its way into many WWTF, there are question arising in many areas. How do you clean the tubing, is one of the leading question. Also, how do you set the percent transmittance meter? Have answers? Share your thoughts.

Q: There is a problem at the Coke plant:
We have an activated sludge system with an aerobic selector that is operating in the high rate mode. The F/M value ranges between 0.5 to 1.0. The mixed liquor temperature is very warm (45°C+) during the summer months. Currently (mid November) the mixed liquor temperature is decreasing with a value of about 31°C+. The wastewater being treated has a highly soluble sugar content.

Recently we have noticed something unusual. There is thick tan colored foam accumulating on the surface of the influent splitter box to the clarifiers. The foam is also spilling onto the clarifier surface but the foam does not exist in the aeration tanks. These are no filaments in the foam.

Does anyone have an explanation?
NHPCA Sponsor's List

A/D INSTRUMENT REPAIR
Tom McPherson
(603) 382-4667

BOETTCHER ELECTRIC
INSTRUMENT & INDUSTRIAL CONTROLS
Peter A. Boettcher
(603) 485-5977

BOSTON COOPER CORPORATION
Timothy C. Berger
(800) 888-9181

CALEY & WHITMORE
Don Pinkham
(617) 623-7430

DUFRESNE-HENRY, INC.
Richard Hertrich
(603) 669-8672

EASTERN ANALYTICAL, INC.
Deidre Jarzombek
(603) 228-0525
(800) 287-0525 (In-state)

EASTERN PIPE SERVICE, INC.
Robert Williams
(603) 889-0929

FREDERICKSEAL, INC.
Ed Silvia
(603) 668-0900

HOYLE, TANNER & ASSOC., INC.
Nelson L. Thibault, P.E.
(603) 669-5555

HYDROPRESS N-VIRO SERVICES
Ray Baldwin
(413) 247-9656

KAMAN BEARING & SUPPLY CORP.
Bob Werner
(603) 883-0551

E.F. KING & COMPANY, INC.
Ron Cunningham
(617) 762-3113

THE MAHER CORPORATION
Frederick Kibble/Paul Sussman
(617) 933-3210

J.D. MEAGER, INC.
James Meager
(508) 366-6606

METCALF & EDDY SERVICES
Tim Slattery
(617) 246-5200

NEW ENGLAND TREATMENT CO., INC.
James Myers
(207) 698-7262

PENN VALLEY PUMP CO., INC.
Allen I. Barry
(617) 696-7450

Q.C. SERVICES
Richard Schieferstein
(207) 583-2980

RED HED SUPPLY, INC.
John Grout
(800) 639-9287

RESOURCE CONSERVATION SVCS.
Marty Richs
(603) 536-5280

RIST-FROST-SHUMAY
John L. Scott
(603) 524-4647

STERNS & WHEELER, INC.
William Hall, Jr.
(603) 622-5838

DAVID F. SULLIVAN & ASSOCIATES
Michael Sullivan
(508) 777-5552

THERMO CONSULTING ENGINEERS
Don Phillips
(800) 989-3514

TRI-STATE PACKING SUPPLY, INC.
James Lee/Dale Weeks
(207) 883-5218

H.L. TURNER GROUP
Doug Tillotson
(603) 228-1122

UNDERWOOD ENGINEERS, INC.
Steve Clifton, P.E.
(603) 436-6192

UTILITY PIPELINE SERVICES, INC.
George Harrington
(603) 625-1212

WASTE, INC.
Ken Bradley
(800) 421-0125

ROY F. WESTON, INC.
Bryce Fletcher
(603) 228-1334

WESTON & SAMPSON ENG., INC.
Steven H. Corr
(800) SAMPSON

R.H. WHITE CONSTRUCTION CO., INC.
Edward Casey
(508) 832-3295

WOODARD & CURRAN
Terry Campbell
(207) 774-2112

WRIGHT-PIERCE ENGINEERS
Charles J. Martin
(207) 725-8721
Every year the New England Water Environment Association (NEWEA) solicits from the state associations nominees for the Alfred E. Peloquin and Plant Operator of the Year awards. One of the responsibilities of the NEWEA state director is to serve as the chairman of the state selection committee. This year, in addition to myself, the committee consisted of Edward Rushbrook and Keith Gilbert.

It is important that all members of the New Hampshire Water Pollution Control Association have an opportunity to provide input regarding candidates for the two nominations. This year, instead of mailing the nomination request with the fall issue of the newsletter, it was included with the fall meeting notice which was mailed the middle of August. Including the request for nomination with the meeting notice resulted in an earlier mailing which gave the membership over a month to provide input. It was believed that, by providing more time to respond, this would result in receiving more nominations. This, however, was not the case since we received a total of only three nomination for the two awards. In order to broaden the choices for the two awards, the committee decided to also consider those nominees from last year that were not selected. On September 9th information on all nominees was provided to each committee member and a telephone poll was taken the following week. Nominations received from NHWPCA members were:

**Operator of the Year**
- Tom Corey
- Robert Cote*
- Roger Pinard*

*1993 Nominations

**Alfred E. Peloquin**
- Donna Trask
- Sheldon Towne
- Wesley Ripple*
- Nelson Thibault*

The Alfred E. Peloquin award is given annually to a person involved in the operations of wastewater treatment facilities from each of the six New England States. This award is to recognize an individual whose personal service has contributed to excellence in plant operations either directly at a treatment plant, or indirectly through assistance and/or training to wastewater treatment plant operations personnel.

It is our pleasure to announce that this year’s nominee for the Alfred E. Peloquin award is Sheldon Towne of the NH Vocational Technical College at Berlin.

The Operator of the Year award is given annually to a person directly assigned to and routinely involved in the day to day operation, maintenance, laboratory and/or related functions of a wastewater collection, pretreatment or treatment facility. The nominee must demonstrate outstanding performance in one or more of twelve areas related to the wastewater field or association contributions.

This year we are pleased to announce that Tom Corey of the Manchester Wastewater Treatment Facility will receive the **Operator of the Year** award.

Congratulations to Sheldon and Tom for these years awards.

I would also like to thank all those that were involved this year, from the committee members to those association members that took the time to submit nominations. I sincerely hope that the association members become more involved next year in this process of honoring their peers with these awards of recognition.