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MERCURY STUDY REPORT

High levels of mercury in humans has been linked to mental and physical development problems in children in the womb. Mercury is a natural element in the earth and is not man made. Mercury is spread in the environment primarily by coal-burning power plants and to a lesser degree, by garbage and medical waste incineration. Once in the environment, the main way that mercury gets into people is by consumption of fish containing methylmercury. Mercury levels have been found to be almost 4 times as high in women who eat at least 3 servings of fish a week, compared to those who eat no fish. The major question is what is the effect of these levels.

Two major, long-term and well-designed studies have yielded results on the affects of mercury on developing children. One study was done on the Faroe Islands where the residents consume a large amount of ocean fish and marine mammals. The other was done on the Seychelles Islands where mothers reported consuming fish an average of 12 meals per week. The paper released most recently was on the Seychelles study.

In the Seychelles, 119 children of fish-consuming mothers were followed from the womb through 9 years old. The typical pregnant woman in the study ate fish an average of 12 meals a week and had mercury levels of 6.9 parts per million in her hair, about 7 times the average U.S. exposure. In the report released in May, the 9-year old children were given 21 mental and motor tests. The researchers concluded that their results did not support the theory that there is a neurodevelopmental risk for children who, in the womb, were exposed to methylmercury only from ocean fish consumption.

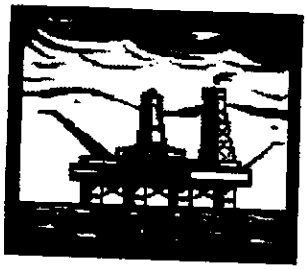
The U.S. Food and Drug Administration recommends that pregnant women avoid eating swordfish, shark, tilefish, and king mackerel altogether. Other fish and shellfish should be limited to no more than 12 ounces per week, or between two and four servings. However, most people in this country eat only one fish dish a week. The lead researcher, G. J. Myers says the latest study suggests that FDA's recommendations are reasonable. Fish are a good source of important brain-building nutrients, like fatty

acids, and it's possible that loading up on these overcomes any negative effect of mercury, Meyers says. His group is now looking for such an effect in their Seychelles subjects.

Sources: *Prenatal Methylmercury Exposure from Ocean Fish Consumption in the Seychelles Child Development Study.* G. J. Myers, D. Palumbo, P. W. Davidson, J. Sloane-Reeves, C. Cox, G. Wilding, J. Kost, L-S Huang, E. Cernichiari, T. W. Clarkson, and C. F. Shamlaye. The Lancet, Volume 361, Number 9370, May 17, 2003. *Landmark Study: Fish is Just Fine for Pregnant Women.* www.thewaveonline.com, May 16, 2003.

OIL, GAS AND MERCURY

In the last two years, the *Mobile Register* newspaper has printed numerous articles about the presence of mercury in Gulf of Mexico fish. While mercury is a basic element, found all over the earth, high levels of certain forms of mercury in water and sediments can lead to high concentrations in fish and in humans who eat these fish. Some studies have linked high mercury levels to mental and physical defects in unborn children and an increased risk of heart disease in adults. Some of the *Mobile Register* articles pointed to the offshore oil and gas industry as a major source of mercury in Gulf of Mexico fish.



Mercury is indeed present in drilling fluids, drilling cuttings and produced water. Drilling fluids, or muds as they are often called, are water-based, synthetic-based or oil-based fluids to which barite is added as a weighting agent. Barite is a soft, very heavy, natural mineral comprised mostly of barium, the fourteenth most abundant element in the crust of the earth. Drilling mud barite is 92% pure, but does include silica, iron oxide, limestone, dolomite, and several metals, including mercury. Most of the barite used to drill offshore wells in the U.S. is mined from natural deposits at Battle Mountain, Nevada. It contains low concentrations of mercury and cadmium, under the limitation of 1.0 part per million (ppm) set for mercury and 3.0 ppm set for cadmium by the U. S. Environmental Protection Agency (EPA) in its Offshore Effluent Limitations Guidelines. Before the 1-ppm limit was set limit for mercury in 1993, the estimated average for mercury in drilling mud was 1.5 – 2.0 ppm. Most of the mercury in drilling mud is in the form of mercury sulfides, which do not dissolve in water, and therefore cannot be taken up by living creatures.

Drilling mud provides lubrication to the drill bit, helps carry drill cuttings to the surface, and because of its heavy weight, is used to prevent bowouts when the bit hits areas of high pressure deep within the earth. The amount of barite added to drilling mud generally increases from about 2 pounds per barrel (42 gallons) of fluid at shallow depths to 350 pounds per barrel near the bottom of a deep well. With the use of barite, it is possible to create drilling muds that weigh twice as much as water.

Drilling fluids are usually reprocessed and recycled during drilling. Eventually, they are changed enough by high pressures and temperatures in the well or by dilution to where they cannot be recycled. Then they may be injected into a well, disposed of in a landfill, burned (oil-based fluids only), applied to agricultural land (water-based fluids only), or in federal offshore waters, water-based muds may be discharged into the sea. Discharges within three miles of shore are not permitted.

Discharges of 20-30 cubic yards of water-based fluids are made off-and-on during drilling. There may be a larger discharge of as much as 200 cubic yards at the end of drilling, particularly for a single exploratory well. When several development wells are drilled from one platform, the fluids from one well may be recycled into use in drilling the next well. Discharged drilling muds are spread over the seafloor in an area within about one-mile from discharge sites and do not accumulate as large piles. The distance it is spread depends upon water current speeds and water depths.

Drill cuttings are particles of crushed rock produced by the grinding action of the drill bit as it penetrates the earth. They range in size from tiny clay-sized particles to coarse gravel. Drill cuttings will contain the amount of mercury that is in the rock being drilled. Drilling muds containing cuttings are circulated through separators on drilling rigs to separate the cuttings from the mud, and the mud is recycled down the hole. Outside of 3 miles from shore, cuttings are allowed to be discharged into the sea. Cuttings generally are not as widely dispersed as drilling muds after release. Marine bottom creatures quickly begin to grow on or in deposits of cuttings.

The water that comes up from the well with oil and gas is called produced water, formation water, or oilfield brine. The amount of produced water discharged can be as large as 157 thousand barrels per day from large platforms that process produced water from several platforms. As a rule, gas wells produce less produced water than oil wells. Most produced water discharges in coastal and state waters have been phased out over the last several years.

Before crude oil can be refined or natural gas can be processed, the water must be removed. Separation of produced water from oil and gas typically takes place on an offshore platform. If not injected into another well, the produced water is treated to meet regulatory limits for oil before being discharged into the sea. Produced water is permitted for ocean discharge in federal waters of the Gulf under general permits.

Produced waters are usually very salty, but disperse rapidly after discharge. Tests using dye showed that produced water was diluted 100-fold within 10 yards of the discharge and 1,000-fold within 110 yards of the discharge point. The amount of mercury in produced water depends largely on the amount of mercury in the earth where the water, oil and gas is taken from. Produced water typically has higher levels of mercury and other metals than natural concentrations in seawater. However, the mercury levels are well below 1 part per billion. Most of the mercury in produced waters in is the elemental mercury and mercuric sulfide forms, which are difficult for living animals to absorb.

Current data, indicates that the offshore oil and gas industry contributes about 346 pounds of mercury per year into the Gulf. This is in comparison to an estimated 48,500 pounds delivered by the Mississippi River, 9,000 pounds from other rivers, and 55,100 pounds deposited in the Gulf from the atmosphere.

Source: *Fates and Effects of Mercury from Oil and Gas Exploration and Production Operations in the Marine Environment.* J.M. Neff. Batelle Memorial Institute. Prepared for the American Petroleum Institute. July, 2002.

WHAT A PAIN!

Quite an international spat has developed over whether or not fish feel pain. Researchers with the Royal Society, Britain's national academy of science, say they have evidence that fish feel pain. They injected rainbow trout in the lips with bee venom and acetic acid. The behavior of these fish was compared to others handled, but not injected, and others injected with saltwater.

They observed that the venom and acid-injected fish showed a "rocking" motion, similar to that seen in stressed higher animals. Those injected with the acid also rubbed their lips on the gravel in the tank. The affected fish took three times longer to begin feeding than the others. Finally, the researchers found pain receptors on the fishes' heads. Study leader Lynn Sneddon said about the fishes' actions "This fulfils the criteria for pain."

Dawn Carr, director for the People for the Ethical Treatment of Animals (PETA) said "....we hope that when people see these results, they will think twice about going angling. Marine biologists and common sense tell us that if you trick a small animal into impaling his or herself in the mouth, that animal is suffering. It's shocking that people will still go fishing for fun. We argue that for every cruel thing people do, there is a compassionate alternative."

The National Angling Alliance (NAA), a British sports fishing group called the research conclusions "surprising" and pointed out a paper by researcher James D. Rose of the University of Wyoming, which says that fish do not have a well-developed enough brain "...to enable them to feel pain, or indeed, fear." Biologist Bruno Broughton a scientific adviser to the NAA, added, "I doubt that it will come as much of a shock to anglers to learn that fish have sensory cells around their mouths. Nor is it a surprise that, when their lips are injected with poisons, fish respond and behave abnormally. However, it is an entirely different matter to draw conclusions about the ability of fish to feel pain, a psychological experience for which they—literally—do not have the brains."

Keith Olberman of cable television's MSNBC, who televised a tape of the injected fishes' behavior, went so far as to declare that the Royal Society's fish ".... reacted in such a way as to express that it really, really hurt." He added, "I'm not a fisherman, nor do I belong to PETA, but it would seem this study needs to be taken seriously." In

response, Charles Jardine, the director of a pro-angling group called Gone Fishing, says it's all supposition "until we have proper, bona fide evidence." Olbermann replied, "Mr. Jardine, try jamming one of your fish hooks in your lip and see how bona fide that feels."

Stepping it up a notch, the Anchorage Daily News in Anchorage Alaska called Olberman "an idiot" in print. Their rationale for fish not feeling pain was that fish regularly eat other spiny fish, get stuck and eat them anyway. They pointed out that even more highly developed animals like dogs do not feel the stick of a hypodermic needle.

Finally, James Gorman, a writer for the New York Times, sought higher counsel. He asked scientist Piet Hut about fish pain. Hut is an astrophysicist at the Institute for Advanced Study at Princeton, New Jersey. According to Gorman, "Dr. Hut is not just any old astrophysicist. He also has a profound interest in consciousness and philosophy, so he knows the turf. He is not an angler. Although he was once a vegetarian, he does not eat some fish but no meat."

Hut said that Rose's paper "made a convincing case that there was no evidence in fish brain structure to indicate consciousness that is compariable to human experience." However, the head rubbing by the fish in response to acid injections "....makes it a little bit more plausible that there could be something that we could call consciousness."

Hut had the most difficulty with the idea of catch-and-release fishing, in which the fish, if they suffer, suffer for the angler's pleasure. "If I were to fish," he said, "I think I would eat the fish rather than throwing it back." Gorman, however points out that fish might prefer to be treated less ethically, getting hooked, caught and tossed back rather than eaten. But then, neither addressed the question of whether fish can do philosophy.

Sources: *British Scientists Say Fish do Feel Pain.* www.msnbc.com/news/907199.-asp?cpl=1, May 2, 2003. *Anglers Carp at Fish Pain Theory.* 2003 Cable News Network LP, LLLP, April 30, 2003. *U.S. Scientist Debunks Fish-Feel-Pain Myth.* Anchorage Daily News. May 12, 2003. *Fishing for Clarity in the Waters of Consciousness.* James Gorman, New York Times, May 13, 2003.

T.E.D. QUESTIONS AND ANSWERS

Effective August 21, new TED rules will go into effect in the Gulf of Mexico. In an attempt to get the most common questions answered, we asked National Marine Fisheries Service gear specialists to give us the most common questions that they are asked and the answers to those questions. Here they are:

Q - Do I need to buy a new TED?
A - Only if your grid is less than 32 inches (outside measurement) in width or height.

Q - How much will it cost to have my TED modified to meet the new requirement?
A - A survey of net shops along the Gulf Coast as well as the East Coast showed a cost of $50 to $70 per TED for the offshore-opening TEDs, and approximately $35 for the inshore-opening TED.

Q - Do I have to pull a top-opening TED when trawling from the beach out to 10-miles?
A - No. Under the new regulation, the double cover or the 71-inch offshore-opening TEDs can be used in a top or bottom-opening configuration in all waters at all times.

Q - Do I have to use polyethylene webbing for the exit hole cover (flap)?
A - No. You may use nylon webbing if you prefer. However, careful attention should be given to knot orientation regardless of the type of webbing used.

Q - Does the TED grid have to be a certain shape or design?
A - No. The grid can be any shape desired as long as it has a minimum height and width of at least 32 inches.

Q - Is a weedless TED a legal TED under the new regulation?
A - Yes, However, it has minimum material specifications and design specifications.

Q - Do I have to pull a short flap on a bottom-opening TED when trawling from the beach out to 10-miles?
A - No. The flap on the 71-inch offshore TED may extend up to 24-inches beyond the posterior (rear) edge of the grid. However, the double cover flap may only extend 6-inches beyond the posterior edge of the grid regardless of where and in what configuration it is used.

Q - Can I use a chaffing webbing flap on a double cover offshore TED opening?
A - No. The regulations only allow chaffing webbing to be used on the 71-inch offshore opening and the 44-inch inshore opening TEDs.

Q - I pull a 20-foot trawl to catch shrimp for my freezer. I am disabled so I use a small winch to retrieve the trawl doors. Do I need a TED?
A - Yes. A TED is required for any primary trawl that is rigged for fishing if the vessel has any mechanical-advantage trawl retrieval systems on board.

Q - Do I need a TED in my trynet?
A - Only if the head rope is greater than 12-foot and/or the footrope is greater than 15-foot. However, if the trynet is less than 12-foot on the headrope and less than 15-foot on the footrope and you do not pull a TED, you are required to abide by tow times.

Q - I trawl for bait shrimp only. Do I need a TED?
A - If the state in which you are trawling allows a bait shrimper to hold both a bait license and a commercial license, then you are required to use a TED.

For further information regarding TED requirements, call NOAA Fisheries in Pascagoula, MS at (228) 762-4591, or go to www.mslabsnoaa.gov/teds.html on the web.

PEW OCEANS REPORT

After two years of work, the Pew Oceans Commission has released its long awaited report, **America's Living Oceans: Charting a Course for Sea Change**. The 18 commissioners traveled around the country and spoke to thousands of people who live and work along U.S. coasts. According to the report, "The story that unfolded is one of a growing crisis in America's oceans and along our coasts." Their report is the first national review of ocean policies since the Stratton Report was released in 1969. Another report, from the U.S. Commission on Ocean Policy, will be completed later in 2003. The Pew Report identified nine major threats to oceans.

Overfishing. As of 2001, the government could only assure that 211 of 959 fish stocks (22%) were not being overfished. The report says that even this figure is optimistic because the legal definition of overfishing does not account for the health of other species or the ecosystem. "The intent of ecosystem-based management is to maintain the health of the whole as well as the parts." According to the report, one of the most promising new approaches to marine conservation is the development of marine reserves (marine protected areas), where all activities that upset the ecosystem or take things from it are prohibited. This includes fishing.

Bycatch. Scientists estimate that fishermen worldwide discard about 25% of what they catch — about 60 billion pounds. This reduces catches in other fisheries and can alter ecosystems. Bycatch in longline fisheries affects sea birds and sea turtles.

Nonpoint Source Pollution. This is pollution that can't be identified as coming from specific points, but rather from broad sources, such as runoff from land or deposits from the air. It is estimated that the oil entering the oceans from runoff from U.S. streets and driveways equals an *Exxon Valdez* oil spill — 10.9 million gallons — every 8 months. The greatest threat, the report says, to coastal marine life is the runoff of excess nitrogen from fertilized farm fields and cities. Nitrogen runoff from animal feedlots is considered to be point source pollution and adds to the problem. It also enters the ocean from the air, where it comes from industrial smokestacks and automobile exhaust pipes. The excess nitrogen in the ocean fertilizes the massive growth of microscopic algae, which removes oxygen from the water when it dies and decays.

Point Source Pollution. Point source pollution comes from identifiable sources. In the U.S., animal feedlots produce about 500 million tons of manure each year, more than 3 times the sanitary waste produced by the human population. In one week, a single 3,000 passenger cruise ship produces about 210,000 gallons of sewage, 1,000,000 gallons of shower, sink, and dishwashing water, 37,000 gallons of oily bilge water, over eight tons of solid waste, and toxic wastes from dry-cleaning and photo processing.

Invasive Species. Alien species of plants and animals are establishing themselves at an alarming rate in coastal waters, often crowding out native species and changing habitats and food chains. In San Francisco Bay alone, more than 175 species of introduced marine fish, invertebrates, algae, and higher plants live.

Aquaculture. Farmed fish can escape, compete with wild fish for space and food, and interbreed with them, producing young less fit for survival in the wild. A salmon farm of 200,000 fish can release as much nitrogen as is in the untreated sewage of 20,000 people, as much phosphorus as for 25,000 people and as much fecal waste as for 65,000 people The report said that the oyster disease dermo (*Perkinsus marinus)* was likely introduced to the Atlantic and Gulf coasts by aquaculture.

Coastal Development. Sprawl development is consuming land at 5 times the rate of population growth in many coastal areas. Coastal counties, which are 17% of the U.S. land area, hold more than half the U.S. population. One of the most harmful parts of development is the creation of hard surfaces — roads, parking lots and rooftops — that prevent water from soaking into the soil. They collect pollutants, which then run off rapidly to natural waters. A one-acre parking lot has 16 times the runoff of a one-acre meadow.

Habitat Alteration. Fishing gear that drags along or digs into the bottom, the report says, destroys seafloor habitat needed by marine wildlife. It can take 5 years for bottom-living invertebrates (animals without backbones) to recover from one pass of a dredge.

Climate Change. World air temperatures are expected to rise by 2.5-10.4° F in this century, causing sea levels to rise by 4-35 inches. A 2° F temperature rise may destroy the world's coral reefs, and an increase in water temperatures could possibly shut down the Gulf Stream.

One of the major problems that the report identified is that the U.S. has a fractured ocean policy. Instead of a system, it is a hodgepodge of 140 separately-passed laws that involve at least 6 federal departments and dozens of agencies. What is needed, the report says, is the development of a new "Ocean Ethic" based on 6 principles:

- **Upholding the public trust** by the government being a steward for the oceans.
- **Practicing sustainability** by taking no more living things from the ocean than the ocean can replace and adding no more contaminants than the oceans can safely absorb.
- **Applying precaution** by erring on the side of protecting ecosystems when science is uncertain.
- **Recognizing interdependence** between human well-being and the well-being of our coasts and oceans.
- **Ensuring democracy** by not allowing the needs and desires of a few people to override the benefits to all people.

- **Improving understanding** of coastal and marine ecosystems with more research.

The Pew Oceans Commission identified 5 main challenges, and made recommendations for changes in U.S. law to meet those challenges.

Challenge 1, Ocean Governance in the 21st Century. The U.S. should enact a National Ocean Policy Act (NOPA) with clear and measurable goals and standards. As part of NOPA, Congress should create "regional ecosystem councils" to plan ocean use, practice ocean zoning and reduce user conflicts. Congress should create a national system of marine reserves (marine protected areas). Congress should also create a new national oceans agency, under which should be placed as many as practical of the oceans programs now under other agencies. Finally, Congress should establish a permanent interagency oceans council. The head of the new national oceans agency should chair the council and its membership, should include the heads of federal agencies whose activities affect oceans.

Challenge 2, Restoring America's Fisheries. The main goal of American fisheries policy should be redefined to be to protect, maintain and restore marine ecosystems. Conservation and allocation decisions should be separated, with conservation always given priority over economic or political considerations. The government should practice marine zoning and ecosystem planning. Fishing should not be allowed until after considering how it affects the entire ecosystem. Fishing gear such as trawls and dredges should be zoned into specific areas and then only allowed if scientists find that the gear can be used with minimum problems. Fishing should only be allowed under bycatch monitoring and management plans, with the goal being near-zero bycatch. Allocation plans that limit access and allocate catch, and meet conservation goals should be developed before fishing is allowed. A permanent fisheries trust fund should be established to fund research data collection, management, enforcement, habitat management, license buyback, and community development programs.

Challenge 3, Confronting Urban Sprawl. Nonpoint source pollution action plans should be developed for watersheds. Critical ecosystem habitat should be protected from development. At all levels of government, development should be managed for compact growth, reduction of hard surfaces and to discourage development in some areas. Government subsidies and programs should be directed away from development and towards activities such as restoration.

Challenge 4, Cleaning Coastal Waters. Congress should establish water quality standards for nutrients such as nitrogen and require the use of best management practices to control runoff from agriculture and development. EPA and the states should ensure that water quality standards are in place for pollutants such as PAHs, PCBs and heavy metals such as mercury. Air emissions of nitrogen, mercury and other pollutants should be reduced. Waste water discharges from animal feed lots and cruise ships should be brought under control and ballast-water treatment for vessels should be required. A national electronic permitting system should be created to track imports of live species that may get loose in the environment. Congress should provide more

funding to develop invasive-species management plans. The U.S. should ratify the Stockholm Convention on Persistent Organic Pollutants. Congress should pass legislation that allows other chemicals to be added to the "dirty dozen" list. More seafood monitoring should occur.

Challenge 5, Sustainable Marine Aquaculture. A new national marine aquaculture policy based on conservation principles should be created for the location, design and operation of ecologically sustainable fish farms. Until such a policy and its standards are passed, Congress should place a moratorium on new marine finfish farms. Also, until a review process can be established, a moratorium should be placed on use of genetically engineered species. The U.S. should provide international leadership for sustainable marine aquaculture practices.

Not everyone agrees with the assessments of the Pew Commission. NOAA Fisheries (National Marine Fisheries Service) points to the number of fisheries species recovering under fisheries management plans. Thor Lassen, President of Ocean Trust said "The fact is most major U.S. stocks, which make up 99 percent of U.S. landings, are fished sustainably. The 16 percent of major stocks that are overfished are either recovering under rebuilding plans or otherwise protected by federal law." Columnist John Fiorillo for News@thewaveonline said, "This report and the work of the commission represent little more than an attempted power grab by environmentalists."

The Seafood Coalition, speaking for 32 fisheries trade associations and four corporations said "The Pew Commission would create several new layers of bureaucracy, eating up any new funding that Congress might provide for fisheries research, "and warned U.S. Congressmen and Senators "Don't be fooled by the negativism in the Pew Commission's report." In a co-written press release, The Trawlers Survival Fund and the Associated Fisheries of Maine called the commission a "traveling road show" funded by the Pew Charitable Trusts, which also funds the environmental law advocacy group Oceana. They called the Pew report "alarmist" and "gloom-and doom".

Finally, U.S. Congressman Richard W. Pombo of California, Chairman of the House Resources Committee, says "The pictures are nice, but this study contributes about as much to fisheries management as a coffee table book about coffee tables. Unfortunately, criticism always sells, regardless of fact. How would they justify the huge expense of time and money if the report supported the great progress we've made in fisheries management? Pew is naturally calling for more of what sustains it and every other radical environmental entity: bigger government and more regulation. They use outdated regulations to file frivolous lawsuits, plunder taxpayer dollars from the U.S. Treasury, and pay the rent on their offices." Pombo added, "Remember, the Pew Commission is funded by the same foundation that has funded some of the more radical environmental groups and has been funding the environmentalists' attack on fisheries management through the courts. That is exactly why Congress created the U.S. Commission on Ocean Policy, which will release its report this fall. We cannot expect such a group to issue non-biased recommendations."

The Pew Oceans Commission was funded by a grant from the Pew Charitable Trust, which supports nonprofit activities in the areas of culture, education, the

environment, health and human services, public policy, and religion. Additional funding was provided by the David and Lucile Packard Foundation, the Rockefeller Brothers Fund, and Oxford Foundation.

Sources: *America's Living Oceans: Charting a course for Sea Change.* Pew Oceans Commission 2003. *Pew Commission: Show Us the MONEY, Spare Us the Dog and Pony Show.* John Fiorillo, News@thewaveonline, June 4, 2003. *The Ocean's Bright Future.* Thor Lassen, News@thewaveonline, June 4, 2003. Open letter from The Seafood Coalition. June 2, 2005. *Fishing Groups Call Report on Oceans Alarmist.* Doug Frazer, Cape Cod Times, June 4, 2003. Press Statement from Congressman Richard Pombo. June 4, 2003.

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THE GUMBO POT

Shrimp and Tasso Pasta

Pat Ataway of Lafayette submitted this month's delightful recipe to us. Pat says that a pound of crawfish tailmeat or two dozen oysters can be substituted for the shrimp. However, if oysters are used, the cream sauce will need to be cooked slightly longer, because the liquid lost from the oysters will thin the sauce. Pat also says that for a delicious variation, a can of drained artichoke hearts may be added. I used shrimp without artichoke hearts and found it delicious.

1	pint of heavy cream	½	tsp dried thyme
½	lb tasso, diced to ¼-inch cubes	1	lb spaghetti
¾	tsp salt	1	lb peeled shrimp
¼	tsp black pepper	½	cup green onions, chopped
¼	tsp red pepper	½	cup parsley, chopped
½	tsp dried basil		Parmesan cheese (optional)

Pour the cream into a large heavy skillet and place over medium heat. Stir the cream when it begins to rise to keep it from overflowing. When it comes to a boil, add the tasso, salt, black and red pepper, and herbs, and let simmer for 8-10 minutes, or until the cream sauce becomes thick. You can prepare the sauce ahead to this point. Cook the pasta al dente. Return the sauce to a simmer, stir in shrimp, green onions, parsley, and cook until the shrimp turn pink, about 3-4 minutes. Ladle the sauce over the pasta and toss. Serve with freshly grated Parmesan cheese, if desired. Serves 4-6.

Sincerely,

Jerald Horst
Associate Professor, Fisheries