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For over 25 years now Microbe Inotech Labs has been serving the community. Providing excellence in Microbiology.

Today Microbe Inotech Labs is looking forward to providing even more services and capabilities with the acquisition of equipment that will help us meet your needs even better.

Whether your needs are simple testing or are complex we can provide you with the results you need to move forward safely.



In the first week of November, Microbe Inotech Labs, is preparing for an educational seminar that will look at the new rules for companies that deal with food labeling requirements for prepared foods. The new food safety laws are coming into effect soon and will have negative impacts on those who are not prepared, and will provide customers a great deal more information for those who are prepared and meet the new guidelines.

The MiL is looking forward to help you understand the rules so you are not caught unprepared, and also provide you with additional resources that will ensure that your facility is providing a safe product to your consumers.

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# Bio-Remediation

We live in a system that has great diversity. This diversity provides food, water, and shelter for many. Due to people's desire to continually improve there are accidents that do damage and harm the environment. Often our designs are created to make the world a safer place for everyone. Even with all of the safeguards things happen that are not planned.

Bioremediation is an unseen friend and sometimes an enemy to how we see our world. Oil spills can damage our beaches and harm wildlife. Natural gas lines can break and we have an expectation that we can smell the odorizer added to the delivery system to help keep us safe. In both these situations organisms can both be a friend and a foe. New bioremediation methodologies and technologies are making the spills easier to clean using what has been learned from events where safeguards have been thwarted by nature. In the largest oils spills it has been found that nourishing the bacteria that are in the area naturally provides a better and faster cleanup than trying to use typically accepted methods of cleaning such as power washing the beaches which only cleans the surface of the sand leaving a mess below the surface unseen.



**Alaskan Beach before and after *Bioremediation***



**Beach cleanup using power washing before and after no Bioremediation**

These same types of bacteria can consume good materials as well as create unseen hazards. A Natural gas line can break and the organisms can start consuming the odor put into the gas to tell us that there is a leak and that there is potential for fire or explosion.

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Continued from page 2: Capturing bacterial organisms and then learning what they will consume is essential for understanding how to use these organisms in controlled cleanup of the environment. When there is a disaster that needs our assistance we can then rely on our unseen friends to eat away at the mess. When they are done they will have lived a happy life and die off to levels naturally occurring in the environment. By providing the bacteria what they need we protect our environment when disaster strikes.

Microbe Inotech Labs is a research laboratory that aids environmental engineers in determining which bacteria and plants can be used in bioremediation effectively. With our background in microbiology and plant sciences we have the skills needed to perform the tests needed to determine what plants and organisms will have the best effect in the contamination area. Once determined we can grow the organisms so that they can be introduced to the sites for that contamination, as well as provide guidelines on providing the necessary nutrients for the organisms to flourish in the environment in order to consume the contaminants. We can aid in the plant side as well, in order to get the contamination to become a less toxic and controllable site.

If you are looking to see how bacteria can impact you negatively or positively as it pertains to creating or solving contamination issues contact Microbe inotech Labs. We have the skills to identify Fungi and Bacteria that help or harm. Let us help identify the risks and point out the benefits that will guide you in meeting your project needs; whether you need to know what mold, fungi, or bacteria is attacking your home or business or you are looking to solve a problem that a micro-organism can assist in, let Microbe inotech Labs be part of your project to guide and protect your plans where micro-organisms are involved.

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## Citrus Greening

Huanglongbing (HLB) or Citrus Greening is now destroying thousands of Citrus trees across the USA. Trees that are affected by HLB have fruit that are bitter, small in size, and green and brown in color. The impact of Citrus Greening is the destruction of hundreds of acres of citrus trees. In some states the reduction of citrus orchards is by as much as 75% of the total acreage due to HLB.

Microbe Inotech Labs is looking at Citrus Greening as a real threat to the US citrus industry and other similar types of plants that could be impacted by the same pathogen. The pathogen *Candidatus Liberibacter* is thought to be the cause of HLB. The carrier of this pathogen is both the African citrus psyllid and the Asian citrus psyllid. These insects can transmit the HLB bacterium that infect the trees.

HLB infected Fruit



Leaves of citrus tree with HLB



Affect of Psyllid on tree



While citrus are the most affected at this point there are other plants that can be impacted by the *Liberibacter* bacterium which could potentially have a significant impact on crop production for other varieties of fruits and vegetables.

Microbe Inotech Labs has experienced staff that has dealt with plant pathology, and wants to be part of the solution for controlling HLB. We are currently looking at our technologies and other technologies that can be effective in developing a commercially viable solution for reducing citrus greening.

Continued from page 3: In Florida alone the citrus industry amounts to \$1.44 billion and employs over 76,000 people. That means nationally the citrus industry in the USA is a multibillion dollar commodity that supplies a living to a few hundred thousand people. Since HLB is not limited to the United States the technologies developed by Microbe Inotech Labs, and others will help citrus farmers around the globe.

## Food Safety Modernization Act

In 2011 congress passed the Food Safety Modernization Act (FSMA). This is the first major change to governmental regulation of food since 1938. With 1 in 6 becoming ill with food borne pathogens and 128,000 having to be hospitalized causing the death of 3,000 people, our food supply could be better. The FDA in cooperation with the USDA are creating guidance to aid companies and individuals who are influential in our food supply. With 15% of the food supply being imported these rules also impact importers of food product into the USA.

The first round of implementation starts September 2016. This is the beginning of funding to states to prepare for the sweeping changes that FSMA requires. Large food producers and processors will have to be compliant in 2017, with small organizations being required to be compliant in 2018. One of the key components to FSMA that will impact organizations is the requirement of a Food Safety Plan.

The Food Safety Plan has several parts that need to be in place. First is food safety system. These include: Hazard analysis, Preventative controls, and Oversight and management of preventative controls.

Hazard analysis first requires hazard identification. Hazard identification must include known or reasonably foreseeable biological, chemical, and physical hazards to the food supply product. Many of these hazards could be present because they are naturally occurring, unintentionally introduced, or even intentionally introduced for economic gain (if they affect the safety of food).

Preventative controls are to be in place to measure and reduce hazards. These controls must consider food allergen, sanitation, supply chain, and recalls.

Oversight Management of preventative controls will be responsible for monitoring, taking corrective action, and verification of these activities. Monitoring is to provide assurance preventative controls are in place and working. Corrective action ensure that problems that are found are corrected and that the problems identified become part of the plan. Verification ensure that monitoring and corrective actions are taking place and that records are kept validating the activities to ensure a safe food supply.

Farming is a primary and secondary set of production activities. Primary production farming is under one management structure that goes from growing, to harvest, to transport for packaging. While secondary activities farming is devoted to harvesting, packaging and or holding raw agricultural commodities.

If you want to know more please visit on the web : <http://www.fda.gov/Food/GuidanceRegulation/FSMA/ucm334115.htm> . Or you can contact Microbe Inotech Labs on how we can be part of your food safety plan.

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## Confidentiality of results

Microbe Inotech Labs holds all of your lab results confidential. The release of lab results must come from the organizational representative or the individual requesting the testing. Once you receive your results you are free to publish this information as you wish.

We stand behind the results we send to you. Because of this we allow you to publish the report with our name (Microbe Inotech Labs) in your published article, report, or publication.