Food Analysis and Safety at the Institute of Environmental Health
Terry Brunson

History:
IEH was founded in 2001 as a preventative measure after bacterial infections became prevalent in food processing facilities. The purpose of this company is to detect food borne bacterial and fungal infections in food samples before they are sold to distributors.

This internship provided excellent opportunities to improve skills such as:
- Aseptic technique
- Optimally growing bacterial cultures
- Accurate chemical testing, e.g. pH, insoluble content, water content, etc.
- Performing PCR on multiple samples in a time sensitive manner
- Media and buffer preparation
- Quality control; includes testing all of our lab supplies, media and specific methods for uniformity and cleanliness
- Data recording and traceability is very important for the credibility of our lab

The Center for Disease Control has released information from 1982 to 2002 regarding *E. coli* outbreaks in the US. ECO157:H7 became relevant in the early 1990’s and has been affecting US agriculture significantly since then. The number of illnesses has decreased over the years but ECO157 is still a prevalent pathogen that requires attention.

IEH works parallel to the USDA as a third party quality control group. We test for the pathogen ECO157, along with several other pathogenic genus' including *Salmonella* and *Listeria*. Our tests can be classified as quantitative or qualitative.

Quantitative tests include growing bacteria in selective agarose media and counting colonies collected from a samples.

Qualitative tests include attempting to grow the bacteria that may be present on food samples and utilizing PCR to detect them. By selecting key genes in a specie’s genome, we can detect the presence of very specific bacterial species.

Benefits:
This internship taught me important lessons in preventing cross contamination and handling samples in an aseptic manner. An emphasis was also placed on maintaining accurate and detailed records of lab activity

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