TOP TEN METAL DETECTOR FAQ'S

1. WHAT IS A METAL DETECTOR AND HOW DOES IT WORK?

A metal detector is an electronic device for detecting the presence of unwanted metal contamination. Basically, a metal detector is made up of a transmitter and a receiver antenna. As metal passes through the electrical field generated by the transmitter the signal picked up by the receiver will change. The electronics of the metal detector "look" at the signal change and "decide" if the change is caused by metal or some other reason.

2. WHY DO I NEED A METAL DETECTOR?

There are only two reasons for using a metal detector: 1) To protect your expensive and critical processing equipment, and 2) to protect the integrity of your final product. If a piece of tramp metal finds its way into your grinder, chopper, mill, cutter, etc., not only will you lose production time and money to repair the machine but now the metal is smaller and harder to find. Maintaining your product integrity can be far more important. A small piece of metal in you final product can be devastating to your company image and reputation.

3. WHERE SHOULD I PUT THE METAL DETECTOR?

If the detector is intended to protect machinery then the detector should be located as close to the infeed section of the machine as practical, while still allowing ample space to stop the machine before metal can enter. If the metal detector is used to inspect your final product then the detector should be located as close as possible to the end of the production line - ideally, after the product has been packed since the chance of contamination after packaging is remote. This may not be practical if the package itself contains metal or if the final package is too large to allow good sensitivity.

4. HOW DO I CHOOSE A METAL DETECTOR?

Today's metal detectors are all sensitive, reliable, rugged, and accurate. The primary objective is to choose a metal detector that is designed for your application. Make sure that the aperture is sized correctly for the various products to be tested and that the detector is in the right location. Select a metal detector manufacturer you can depend on for support and expertise.

5. WHAT IS PRODUCT EFFECT?

Virtually all products will create some type of signal in the metal detector as they pass through the electrical field. Factors that can contribute to this "product effect" signal are: moisture content, fat content, acidity, temperature, salinity, orientation, and mass. In general, smaller product effect signals allow for better metal detector sensitivity. The ability of a detector to compensate for product effect can also increase sensitivity to metal.

6. WHAT IS SENSITIVITY?

Metal detector sensitivity is defined as the minimum diameter sphere that can be consistently detected at the center of the metal detector opening. Sensitivity can be stated as "maximum" or "in-product". Maximum sensitivity is the best sensitivity that a metal detector can achieve under ideal conditions. In-product sensitivity is much more meaningful as it is the sensitivity a metal detector can achieve when actually inspecting product.

7. WHAT FACTORS AFFECT SENSITIVITY?

Metal detector sensitivity can be affected by many factors: product effect, size and shape of metal contaminants, type and orientation of metal contaminants, metal detector opening size, and the environment of operation.

8. WHAT ARE THE DIFFERENT TYPES OF METALS?

Ferrous metals are magnetic type metals such as steel and iron and are the easiest for metal detectors to find. Non-ferrous metals are non-magnetic metals such as copper, aluminum, brass, bronze, and are almost as easy to detect as ferrous metals. Non-magnetic stainless steel such as types 302, 304, and 316 are by far the most difficult of metals to detect. In general, a piece of non-magnetic stainless steel must be 1½ to 2 times larger than a ferrous piece of metal to be detected by a metal detector.

9. WHAT SHOULD I DO IF THE METAL DETECTOR FINDS METAL?

Many metal detector systems are equipped with an automatic rejection device that will remove the suspected product from the production line. These should be collected and examined to find the metal contaminant and trace the metal to its source. Small metal pieces can be an early warning sign of a major breakdown. If an automatic reject device is not practical then the product should be manually removed from the line and the same procedure should be followed.

10. HOW DO METAL DETECTORS HELP WITH HACCP REGULATIONS?

The main purpose of the HACCP initiative is to develop a procedure that identifies possible locations in your production line where product contamination can occur and to create a method of inspecting those locations on a regular basis to prevent contamination. Documentation of these inspections is a major feature of any HACCP plan. Most modern metal detectors have a record keeping ability to provide a history of contamination incidents.