

FOOD GRADE LUBRICANTS SUPPLEMENT

■ Ashlee Breitner

Business Unit Manager: Non-food Compounds, Consumer Products
& Food Contact Regulatory Compliance, NSF International

360° of safety

The use of complicated chemical compounds in food production today is becoming more prominent as machinery and equipment become more technologically advanced. As these compounds become more complex so do the risks associated with them. The food grade lubricants industry used to be a niche market for many large industrial lubricant manufacturers but as the focus on food safety grows so does the need for safer chemical compounds to be used in their production process. The growing focus on food safety to protect consumers today from food borne illnesses has led to the increased demand, for what the industry has deemed ‘food grade lubricants’, ‘H1’ or lubricants that may have incidental food contact.

Safety can be an all-around concern in the industry of food production but this article will take an in depth look at the degrees of safety associated with food grade or ‘H1’ lubricants from product design to distribution.

Formulating

The life cycle of a lubricant, as with most products, begins at design and conception. In this stage the formulation of the product is designed to meet the needs of the particular application in which it will be intended to be applied. In the case of food grade lubricants the focus is not only on designing a formulation that will meet the performance needs of the application but there is also an additional focus on designing the formula to meet regulatory requirements. This added focus is necessary to meet the needs of producing a safe product specific for the food industry. The formation, in order to be regulatory compliant for sale or use in the United States must be formulated in compliance with Title 21 CFR, Section 178.3570 for Lubricants with incidental food contact and other applicable sections referenced therein. Today most other countries have adopted compliance with this Code of Federal Registrar for Food and Drugs from the United States or something similar in lieu of creating their own regulations for their country.

Production

Once the research and development teams have formulated and tested their pre-production lubricant to ensure it meets all physical and performance aspects necessary to create a viable product, the next critical step is manufacturing the product in a manner that all elements of safety are considered. The food grade lubricants industry saw there was a need to establish a voluntary ISO standard for lubricants used in the manufacturing and processing of food and similar products. Once published this document was titled, “ISO 21469: 2006(E) – *Safety of machinery – Lubricants with Incidental Product Contact*”, and was produced by the Technical Committee ISO/TC 199, Safety of Machinery. This standard specifies the hygiene requirements for the formulation, manufacture and use of lubricants which may come into contact with food products during processing.

The scope of this international standard goes beyond lubricants used in food applications to also cover lubricants used for processing high risk products including cosmetics, pharmaceuticals and animal feed. The intention behind the broadened scope of ISO 21469 is to provide additional risk mitigation solutions for other product categories where hygiene standards in manufacturing are of particular concern.

Companies leading the way in food grade lubricant production indicate that ISO 21469 goes beyond the requirements of H1 and covers the whole life cycle of the lubricant. Today, it is assumed that the lubricant manufacturer is required to analyse the hygiene aspects that arise from handling a lubrication product, and to advise the user accordingly. This way a food and beverage producer can be assured that every effort has been made to take their safe usage and hygiene requirements into account all whilst delivering long-term lubricant performance and equipment protection.

Companies seeking to demonstrate their commitment to quality by applying for ISO 21469 certification are thoroughly evaluated to ensure that their products meet particular hygiene requirements for the formulation, manufacture, and use and handling processes of lubricants that may have incidental product contact. ISO 21469 certification requires lubricant manufacturers to develop a hygiene strategy and to consider chemical, physical and biological hazards in the context of the lubricant end use.

In terms of the production process itself and ensuring a safe product is manufactured each and every time production is run, the risk assessment evaluation of the ISO 21469 certification process is critical in identifying potential hazards, the risk estimation of those hazards, and the risk evaluation of the current process controls. The hazard identification process that these manufacturers go through should include the potential for chemical, biological and physical contamination of the lubricant. Further, when determining the hazards, all of the phases of a lubricant's lifespan should be considered.

Potential points in the production process for these hazards typically include:

- Manufacture (Formulation or ingredients (including material sources), compounding, blending, processing, pre-packaging containment / bulk holding, packaging materials, process and equipment)
- Handling/Transport (Transfer, transport or shipping, shelf – life, repackaging)
- Use/Replenishment (Lubricant use/application, service age/range, contamination of lubricant by the product, environmental conditions/exposure, foreseeable misuse of the lubricant)



Olive oil processing



Processing plant

Once the hazards are identified a manufacturer is not done there. Just identifying the hazard will not produce a safe product. For each hazard identified, then determining the level of risk associated with that hazard should lead the manufacturer to the level of controls that need to be put in place to avoid that hazard from occurring. Information on the risk estimation is typically based on data collected over time such as accident histories, risk comparisons, and statistical data.

The final and most critical step in the risk assessment process would be for manufacturers to indicate what steps have been taken to eliminate the risk, or reduce it to an acceptable level. Putting into place control measures specific to the hazard identified and the risk level associated with it ultimately will determine just how comprehensively safe the final product sold to food producers today will be.

Designing the packaging and labels

Once the product is formulated and produced taking into consideration incidental food contact safety, food grade lubricants need to then consider designing the packaging of the final product in a manner that will prevent contamination from outside sources. Environmental conditions in the packaging process of these lubricants often is a major point of contamination from either outside factors, such as pest contamination, dust and debris buildup, or from introduced points of cross-contamination from other industrial lubricants not formulated in a manner that would be in compliance with applicable food safety regulations and requirements.

With increasing demand for safer products also comes an increased demand for safer and more accurate product labelling. Companies

FOOD GRADE LUBRICANTS

SUPPLEMENT

today use just about any marketing tactic they can to sell their products, so seeing through what is purely a sales tactic versus what is a valid performance claim for a product is critical in sourcing safe lubricants into a food production facility. Registration bodies such as NSF International, review product labels before granting registrations of food grade lubricants, for accuracy of the applicable end use and false claims in terms of the products use in food production. Therefore one easy way to ensure the product you are sourcing is making valid safety claims is to source only registered or ISO 21469 certified products, as this label claims compliance is a base line requirement.

So with all of these safety elements to consider you may be asking yourself what to ask of food grade lubricant manufacturers before you will buy their products, to make sure the lubricants you buy have 360 degrees of safety. My suggestions would be:

1. Is your product formulated to meet applicable regulations for use in a food production facility?
2. Is your product formulated specifically for incidental food contact use?
3. Have you evaluated your production process for potential hazards and what measures have you taken to mitigate these risks?
4. Are your products ISO 21469 certified? (visit www.nsf.org to access the most current list of ISO 21469 certified products)
5. How are your products packaged to prevent contamination?
6. How do I know the marketing claims you make on this product are valid? Show me testing or compliance data.

Food adulteration due to contamination by traditional lubricants can result in product recalls and be costly, both to the bottom line and a

company's reputation. The benchmarks the lubricants industry is striving towards; "increased efficiency, cost reduction, streamlined processes, and risk mitigation", can be synonymous with making a safer lubricant product. For companies focused on protecting and improving the integrity of the food supply chain, ISO 21469 is the standard that helps bring both worlds together.

In conclusion, quality food grade lubricant manufacturers have a lot to consider when producing a safe product. From formulation to labelling, food grade lubricants today are becoming more and more key in producing safe food for today's billions of consumers. However, not only does the risk of producing a quality lubricant lie with the lubricant manufacturers, but even more so with the food producer, so asking the critical questions is key to creating 360° of safer food. 🍷

About the Author

Ashlee Breitner is Business Unit Manager of the NSF Nonfood Compounds Registration program. Ashlee has worked at NSF International for five years serving in positions with NSF International, including Group Leader for the NSF Consumer Products program. Her expertise in the NSF certification process enriches the Nonfood Compounds Registration program and continues NSF's mission to deliver a program that provides product manufacturers, food producers and regulatory/inspector groups with a proven method to determine product acceptability.



Ashlee oversees all aspects of NSF's Nonfood Compounds Registration program. She leads the Nonfood Compounds team in developing new service offerings, improving existing processes, enhancing their customer service skills and representing NSF International at industry events and conferences.

Ashlee also works closely with NSF Registered companies and regulators, assuring that the NSF Nonfood Compounds Registration program continues to utilise the most up-to-date regulatory requirements and industry best practices.



- **More than 60 H1-registered Lubricants**
- **Full Regulatory Safety Compliances**
- **Optimum Performance**
- **Superior Protection of Equipment**

Keep your food safe



Tailored Solutions for Critical Applications