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**The overlooked component
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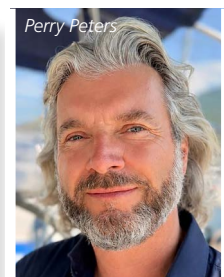
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The overlooked component that strengthens modern food safety

Sam Cole, Global Director of Food Contact Evaluation at NSF, and Perry Peters, Joint Chairman of ELGI Food Grade Lubricants Group and CEO of Matrix Specialty Lubricants

In food manufacturing environments, the smallest details can carry the greatest risks. While much attention rightly focuses on ingredients, processing aids and packaging, lubricants remain an important yet frequently overlooked part of food safety systems. In highly automated facilities, where machinery operates continuously and at scale, the consequences of using an unsuitable lubricant can quickly move from a maintenance issue to a food safety concern.



Modern food-grade lubricants deliver performance that equals or exceeds conventional industrial alternatives while maintaining the highest safety standards. However, this wasn't always the case. When food-grade lubricants first emerged in the 1960s, they encountered considerable scepticism due to their limited performance. As a result, some manufacturers limited their use to areas where they were considered unavoidable, creating a patchwork approach to food safety.

The historical context helps explain some of the attitudes that still exist today. Early food-grade lubricants could not always match the performance of conventional products, which made some manufacturers reluctant to use them more broadly. Today's formulations, often based on synthetic oils, have changed that equation. They can offer equal or superior performance while meeting stringent European safety standards.

What 'food-grade' really means

Food-grade lubricants are distinct from standard industrial lubricants in how they are formulated, assessed and verified for use in food production environments. In the EU and the UK, while there are no specific regulations dedicated exclusively to food-grade lubricants, they fall under broader food safety considerations.

Regulation (EC) 1935/2004 addresses materials intended to come into contact with food, but it does not specifically apply to food-grade lubricants because their contact with food is accidental rather than intentional. Similarly, Regulation 178/2002, which establishes general principles of EU food law, applies broadly to all substances that might contaminate food, including lubricants, but does not contain specific requirements for lubricant formulation or testing. At a high level, these regulations require that substances should not transfer to food in harmful quantities.

In the UK, specific regulations for food-grade lubricants are also lacking, but the Food Standards Agency (FSA) and the British Retail Consortium (BRC) do provide guidelines and certifications that often require the use of NSF H1 or ISO 21469-certified lubricants.

Understanding the regulatory landscape is essential. When a manufacturer sees registration or certification marks like NSF H1 or ISO 21469, it indicates that the product has undergone rigorous evaluation against globally recognised food safety standards. These external verifications help prevent contamination risks and support compliance with HACCP (Hazard Analysis and Critical Control Point) and other food safety management systems, as well as the increasing demands from international food brands.

The value of third-party certification goes beyond regulatory compliance. Working with certification bodies can provide insights that internal audits may not identify. The registration process helps ensure lubricants meet food safety requirements, supports customer food safety programmes and provides confidence during inspections by European authorities.

A complete transition to food-grade lubricants in food and beverage production facilities can significantly strengthen food safety programmes. This is not simply a compliance measure; it's a practical way to reduce the risk of toxic contamination. As modern formulations have improved, the industry has fewer reasons to justify using conventional lubricants anywhere in food production environments.

While certified food-grade lubricants may present higher upfront costs, the total cost of ownership is typically lower due to several operational factors. These include an extended service life requiring fewer oil changes, reduced waste and environmental impact that support EU sustainability objectives, lower maintenance and energy costs, and simplified inventory management. Additionally, the complete transition eliminates costly contamination risks and potential regulatory penalties.

Food safety remains paramount, but European manufacturers should also recognise the operational benefits of properly certified lubricants. Beyond supporting compliance with EU and UK regulations, these products can deliver improved performance,

efficiency and reliability, creating value that extends far beyond basic safety requirements.

Customers increasingly expect products that meet the highest standards, and lubricant manufacturers must stay ahead of industry expectations. As regulations tighten and food manufacturers seek greater assurance, the role of food-grade lubricants in supporting food safety, compliance and operational efficiency is becoming more important.



Momentum on PFAS and MOAH

Recent years have brought increased scrutiny of harmful chemicals, particularly per- and polyfluoroalkyl substances (PFAS) and mineral oil aromatic hydrocarbons (MOAH). These substances have become major concerns because of their potential health impacts and persistence in the environment.

PFAS are synthetic materials that resist degradation, earning the nickname "forever chemicals." Epidemiological evidence suggests associations between increased PFAS exposure and serious health effects, including elevated cholesterol levels,

pregnancy-induced hypertension and certain cancers. MOAH compounds derived from crude oil and petroleum have been identified as potential carcinogens when they contain three or more aromatic rings. Both can contaminate food through various pathways, including machinery lubricants, release agents and migration from food-contact materials.

According to the European Chemicals Agency (ECHA), considerable regulatory changes are imminent. By the end of 2026, a universal PFAS restriction under REACH is expected, with new packaging regulations establishing PFAS thresholds in food packaging by August 2026. The EU's new regulations establish specific limits: 25 parts per billion (ppb) for single PFAS and 250 ppb for the total PFAS sum.

Future regulations are expected to extend beyond food processors to include the wider supply chain, including the agricultural sector. Farmers using machinery and lubricants in harvesting could face stricter compliance requirements, helping ensure food remains safe from production to packaging.

Until recently, manufacturers seeking to demonstrate that nonfood compounds and food equipment materials were free from intentionally added PFAS had limited options for independent verification. In March 2025, NSF introduced Certification Guideline 537: PFAS-Free Products for Nonfood Compounds and Food Equipment Materials, providing manufacturers with a clear route to verify and communicate product safety.

Certification to NSF 537 involves a thorough formulation review of product ingredients to confirm there are no intentionally added PFAS. It also includes laboratory testing to ensure minimal to no detected total organic fluorine levels, alongside annual retesting and rigorous disclosures from manufacturers.

At the same time, NSF developed Certification Guideline 538: MOAH-Free Products for Nonfood Compounds and Food Equipment Materials. This comprehensive testing ensures MOAH content remains below 100 ppm and verifies that no mineral oil, paraffin, naphthenes, polycyclic aromatic hydrocarbons or wax is intentionally added. The process also confirms that facilities maintain procedures to minimise the risk of contamination.

In Europe, regulators are implementing strict MOAH limits in food products, prompting the food industry to demand materials that meet high safety standards and carry independent certification. Once certified, products may use the official MOAH-Free certification mark, signifying compliance with the guidelines to retailers and consumers.

The elimination of PFAS and MOAH from the food industry represents both a major challenge and a strategic opportunity. Organisations that approach this transition proactively can turn regulatory requirements into a competitive advantage.

The launches of NSF 537 and NSF 538 represent more than just the validation of food industry products that are PFAS and MOAH-free. They also mark a step towards advancing the design and formulation of more sustainable, toxin-free products within the food equipment and chemical manufacturing industries.

As these expectations evolve, the distinction between a product claim and an independently verified claim is becoming increasingly important.

Turning claims into confidence

The emergence of PFAS-free and MOAH-free certification reflects a wider shift in food safety: broad product claims are no longer enough. As scrutiny of chemicals of concern increases, manufacturers are being asked to demonstrate not only that a lubricant is suitable for incidental food contact, but also that its formulation has been independently reviewed, tested where appropriate, and subject to ongoing controls.

This is particularly important for multinational food producers operating across several jurisdictions. A lubricant used in one facility may need to satisfy internal safety policies, customer expectations, retailer requirements and regulatory scrutiny in multiple markets. In this environment, third-party validation and certification provide a common language between lubricant suppliers, equipment manufacturers, auditors and food brands.

Food safety systems depend on trust, but trust must be supported by evidence. Independent certification gives manufacturers a structured way to demonstrate that products have been reviewed against recognised requirements, rather than relying solely on supplier declarations or assumptions about suitability.

For food manufacturers, the practical implications extend beyond product approval. Specifying certified lubricants during procurement can reduce ambiguity for engineering and quality teams, while clear labelling and documentation help prevent misapplication on the factory floor. In facilities with multiple production lines, frequent maintenance interventions or high staff turnover, this clarity can significantly reduce the risk of human error.

Education also remains essential. Terms such as “food-grade,” “PFAS-free” and “MOAH-free” may appear straightforward, but each refers to a different aspect of risk and may be supported by different levels of review. Understanding what a registration or certification mark represents, and what its limitations may be, allows manufacturers to align lubricant selection with their hazard analysis, customer requirements and broader food safety objectives.

Terminology matters because a product claim is only meaningful when users understand what has been evaluated, what the mark represents and what limitations may apply. Documentation, training and traceability are therefore essential parts of a robust food safety programme.

As preventive food safety approaches become more established, lubricant selection should be treated as part of the overall safety strategy rather than a narrow maintenance decision. Verified products can support risk reduction, simplify supplier approval and provide reassurance during audits. More importantly, they reinforce the principle that every material used in and around food production has a role in protecting consumers.

From obligation to advantage

The route to enhanced food safety goes beyond meeting minimum requirements. It requires embracing a culture of excellence in which certification acts as the foundation for consumer protection, regulatory compliance, and operational success.

More stringent regulations are likely to be introduced across Europe in the years ahead. Certifications can help businesses maintain a leading edge by preparing them for future regulatory compliance obligations while providing an added layer of assurance for manufacturers seeking to protect their products in existing markets and expand into new ones.

For food equipment manufacturers, lubricant suppliers and specifiers, the message is clear: lubricants can no longer be treated as a peripheral maintenance choice. The tools, standards and certifications needed to manage this risk are available today. The question is not whether food production environments should adopt verified solutions, but how quickly organisations can use them to protect consumers, support compliance and strengthen their competitive position in an increasingly demanding market.

[nsf.org](https://www.nsf.org)

[matrix-lubricants.com](https://www.matrix-lubricants.com)



Bios:

Perry Peters

Born in 1966, Perry Peters graduated as a Marine Engineer and began his career with Shell, where he was responsible for lubricant sales in the Netherlands. Prior to founding Matrix Specialty Lubricants BV more than 23 years ago, he held senior commercial and management positions with both Castrol and Petro-Canada.

Driven by a passion for solving complex technical challenges and identifying opportunities where others

see problems, Perry has dedicated his career to the world of specialty lubricants. With nearly four decades of experience spanning product development, manufacturing, marketing, and international sales, he has established himself as a recognised expert within the lubricant industry.

Today, Perry serves as CEO of Matrix Specialty Lubricants, a Netherlands-based company focused on delivering the right lubricant solution for every application. The company's extensive portfolio includes a comprehensive range of industrial lubricants, among which more than 150 food-grade lubricant products serve the demanding requirements of the food and beverage industry worldwide.


In addition to his role at Matrix, Perry is Co-Chair of the Food Grade Working Group within the European Lubricating Grease Institute (ELGI), where he actively contributes to industry initiatives aimed at advancing food safety, regulatory compliance, and technical knowledge throughout the lubrication sector.

Sam Cole

As Director of Food Equipment, Cole leads NSF's nonfood certifications and evaluations teams. His teams prevent foodborne illness by certifying and registering commercial and processing food service equipment, food contact materials and nonfood compounds, including lubricants, greases and other chemicals used in and around food processing areas.

NSF also serves as a third-party profiler (TPP) for the Environmental Protection Agency's Safer Choice programme. Cole joined NSF's Product Certification team in 2015. His wealth of knowledge in the certification process and industry regulations has supported clients around the globe, helping to support NSF's offerings in the areas of food contact materials and food equipment. Cole holds a Bachelor of Applied Science in Genetics from Michigan State University. Prior to joining NSF, he held various leadership positions in the retail industry.

NSF is a global organization dedicated to protecting and advancing human health. Through science-driven standards, testing, certification, research and advisory services, NSF helps improve the safety, quality and trustworthiness of food, water and wellness products and systems worldwide.

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