

Enzymes for the Cleaning Industry

Enzymes are a ubiquitous and important part of the cleaning industry because of their innate ability to break down proteins, fats, and carbohydrates (Basketter *et al.*, 2012). Enzymes are primary active ingredients in products such as powder and liquid detergents, stain removers, laundry pre-spotters, automatic dishwashing detergents, and industrial/medical cleaning products to name a few.

Enzymes are widely used and shown to have an excellent safety profile, with a low potential to cause adverse effects in humans (Basketter, *et al.*, 2012).

Enzymes used in the cleaning industry constitute a large part of the worldwide enzyme market (Li *et al.*, 2012) with a projected value projected of over \$1.2 billion in 2021.¹ Given their impact on the world's economy and the modern chemical industry, there have been increasing efforts to establish sensible regulatory frameworks that foment innovation and business acumen; and more importantly to protect consumers and industry workers. ETA is proud to lead this advocacy work on behalf of enzyme companies.

United States

In the US, cleaning enzymes are regulated at both the state and federal level. The Federal Hazardous Substance Act (FHSA)² requires precautionary labeling on containers of hazardous household products to help consumers safely store and use those products and to provide them with safety information in case of accidental exposure. Additionally, the Consumer Product Safety Act (CPSC)³ develops safety standards and pursues recalls for products that present unreasonable or substantial risks of injury or death to consumers. Also, under the umbrella of the CPSC, the Poison Prevention Packaging Act (PPPA)⁴ oversees the requirements for household substances to be packaged in child-resistant packaging.

Enzymes for the cleaning industry are also regulated under the federal Toxic Substance Control Act (TSCA), which is administered by the US Environmental Protection Agency (EPA). Enzyme production microorganisms that are genetically modified to express genes from outside the host microorganism genus as well as the enzymes themselves require TSCA status.

At the State Level the “General Consumer Products Regulation” from the California Environmental Protection Agency (EPA)⁵ oversees consumer product regulations in the state of

California, which include cleaning products. In the state of Washington, the Washington State Law RCW 70.95L.020⁶ regulates the phosphorous content in detergents.

¹ www.bccresearch.com/market-research/biotechnology/enzymes-industrial-applications-report-bio030i.html

² <https://www.cpsc.gov/Business--Manufacturing/Business-Education/Business-Guidance/FHSA-Requirements>

³ <https://www.cpsc.gov/Regulations-Laws--Standards/Statutes/Summary-List/Consumer-Product-Safet-Act>

⁴ <https://www.cpsc.gov/Regulations-Laws--Standards/Statutes/Poison-Prevention-Packaging-Act>

⁵ <https://www.arb.ca.gov/consprod/regs/regs.htm>

⁶ <https://app.leg.wa.gov/rcw/default.aspx?cite=70.95L.020>

Canada

In Canada, cleaning products containing enzymes are regulated through diverse avenues. The Consumer Chemicals and Containers Regulations (CCCR)⁷ through Health Canada establishes classification criteria, labelling, and packaging requirements for chemical products used by consumers. In addition, under the Canadian Environmental Protection Agency (EPA)⁸, enzymes that are used in cleaning products must be listed in the Domestic Substances List (DSL) and Non-Domestic Substances List (NDSL)⁹.

Latin America

In Brazil, the “Agencia Nacional de Vigilância Sanitária” (ANVISA)¹⁰ is the regulatory body that oversees the registration of enzymatic detergent products.

Relevant regulations in Mexico focus on consumer protection, packaging and labeling. In Mexico the National Chamber of the Industry of Oils, Fats, Soaps and Detergents (CANAJAD)¹¹ oversees the manufacturers of these products.

References

Basketter, D., Berg, N., Broekhuizen, C., Fieldsend, M., Kirkwood, S., Klui, C., Mathieu, S., Rodriguez, C. (2012). Enzymes in cleaning products: An overview of toxicological properties and risk assessment/management. *Regulatory Toxicology and Pharmacology*, (64)1: 117-123.

Li, S., Yang, X., Yang, S., Zhu, M., Wang, X. (2012). Technology Prospecting on Enzymes: Application, Marketing and Engineering. *Comput. Struct. Biotechnol J.* (2):e201209017.

⁷ http://www.hc-sc.gc.ca/cps-spc/pubs/indust/cccr-2001-rpccc/ref_man/index-eng.php

⁸ <https://www.ec.gc.ca/?lang=En>

⁹ <https://www.ec.gc.ca/subsnouvelles-newssubs/default.asp?lang=En&n=B303D023-1>

¹⁰ <http://portal.anvisa.gov.br/en/contact-us>

¹¹ <http://www.canajad.org.mx/quienessomos.html>