

DSM's position on Industrial Biotechnology

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DSM believes industrial biotechnology is not only essential to modern society, but that it will play a key role in securing the quality of our life in the future. Industrial biotechnology helps to (1) reduce our natural resource consumption, (2) drive the sustainability of our global food systems, and (3) enable the transition to an economy that is less dependent on fossil raw materials. As such, DSM is fully committed to the further development and use of safe and responsible industrial biotechnology.

Our world is facing a series of interconnected and daunting challenges, including climate change, natural resource depletion and population growth. In view of these challenges, our society needs to develop more efficient and sustainable food systems, reduce its dependence on fossil raw materials, and move away from linear economic models toward a more circular, bio-based economy. This re-design can be achieved by making use of nature's toolbox, as well as developing innovative new technologies.

Industrial biotechnology, specifically, can help tackle many of our world's challenges, since it is a crucial technology for the production of sustainable, bio-based food, feed, fuel and materials that help to address climate change and resource scarcity, and drive circularity. Drawing on more than 150 years of successful science and innovation, DSM has pioneered industrial biotechnology, building a strong track record of developing vitamins, yeast extracts, preservatives, cultures, biofuels, and bio-plastics via biotechnology.

Nevertheless, the rapid progress of industrial biotechnology has raised questions in society about its consequences, and the impact engineered microorganisms could have if they spread outside of controlled environments. In this position paper, we address some of the key questions surrounding DSM's use of industrial biotechnology, how we ensure responsible use of this technology, and the direction we expect this to evolve in.

What is industrial biotechnology?

Industrial biotechnology uses microorganisms – such as bacteria, yeast and other fungi, algae, or bio-catalysts like enzymes – to generate industrial products and processes. In particular, industrial biotechnology can be used to make biobased products in sectors such as food, feed, fuels and materials. In doing so, it uses renewable raw materials, making it one of the most promising, innovative approaches toward a circular, bio-based economy.

Is Industrial biotechnology the same as genetic engineering/modification?

No, industrial biotechnology is a much broader concept, being about using microorganisms and enzymes as tiny 'bio-factories' to produce specific solutions. The microorganisms used are selected for the traits that allow them to function as efficiently and sustainably as possible for the desired application. Just one of the ways in which microorganisms are developed for these traits, or to introduce new traits, is through genetic modification. There are other strain development techniques such as classical mutagenesis and selection methods.

Does DSM consider the use of industrial biotechnology to be safe?

Yes, DSM considers the use of industrial biotechnology to be safe. Microorganisms are naturally occurring, and they are essential to our daily lives. For example, enzymes help break down the food in your gut and quickly convert it into energy. And the human microbiota – the vast array of bacteria, microbes and viruses that populate our bodies – support other critical functions for life including supporting our immune system.

The same level of safety applies to our genetically modified production microorganisms which are used in the manufacturing of a variety of our products. They undergo the same, rigorous, science-based safety assessment both internally at DSM and in the course of the regulatory approval processes.

Industrial Biotechnology has a long history of safe use, in the industry and at DSM. DSM has always and will continue to apply state-of-the-art quality and safety standards, comply with regulatory requirements, and support authorization procedures that are based on rigorous, science-based safety assessments. In addition, we remain committed to offering a high level of transparency over our processes, with a view to fostering a clear understanding of the benefits of industrial biotechnology.

How does DSM use industrial biotechnology?

DSM uses industrial biotechnology to create products and solutions such as vitamins to boost our health; yeast extracts for taste and texture of food; preservatives to tackle food waste; cultures, yeast and enzymes for making every day products like cheese, beer and wine; zero-calorie Stevia sweeteners to reduce sugar levels in food and beverages; biofuels that reduce our carbon footprint; and bio-plastics that reduce our fossil resource consumption.

Does DSM use genetic modification?

At DSM, we use genetically modified microorganisms (GMMs), as well as classically developed strains, in applications in a wide range of areas, from more sustainable production methods in food and nutrition to biofuels. For instance, genetically modified microorganisms can turn agricultural waste, such as corn cobs, stems, stalks and leaves into bio-ethanol. In doing so we adhere to regulatory frameworks and any applicable labelling legislation. All our final nutritional products which DSM supplies to the food and feed industries do not contain any GMMs.

How does DSM view the future of biotechnology?

DSM will continue to invest in responsible use of industrial biotechnology as a means of addressing the societal challenges we collectively face. We can expect the speed and precision of research and development cycles to accelerate as digital technologies progress. As such, industrial biotechnology can help to deliver better food and energy products and drive the sustainability of industrial processes. In this way, industrial biotechnology will become increasingly important in the years to come, both within DSM and for our society at large.