



Whitepaper

Ensuring compliance with the National Bioengineered Food Disclosure Standard

How food manufacturers can
enhance traceability with
technology to be compliant

Sage

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Introduction

If you're a food manufacturer, importer, or retailer, you may soon have to be aware if your retail food and drink products contain bioengineered material(s).

You might need to inform customers by changing product labeling or display signage.

Bioengineering (BE) is often referred to as producing genetically modified organisms, or GMO. Sometimes the phrase genetic engineering is used. But all these terms refer to the same thing.

Beyond labeling requirements

The National Bioengineered Food Disclosure Standard (NBFDS) is a mandatory requirement as of January 1, 2022.

It carries the force of federal law via an amendment to the Agricultural Marketing Act of 1946. This required the Agriculture Marketing Service (AMS) of the U.S. Department of Agriculture (USDA) to establish and enforce the NBFDS.

If your business falls within scope of the NBFDS, you may need to adjust product labeling or signage—but the requirements go far beyond this.



And there are implications if you supply ingredients to the food manufacturing industry, even if the NBFDS doesn't directly affect you.

- The NBFDS means you must fully understand the supply chain for foods or ingredients to know whether any are BE, or contain BE materials.
- It may be necessary to measure the degree to which an ingredient or product is BE.
- It's necessary to maintain relevant documentation for all ingredients or foods used in products that fall within the scope of the NBFDS, even if they don't contain BE material.

Note that, within the definition used by the NBFDS, “food” means both food and drink, as well as other items like dietary supplements. In this guide, we use the word “food” to mean everything within the scope of the NBFDS, and the word “entity” to refer to any business affected by the NBFDS.

Key points of the NBFDS for your business

The NBFDS was created to cater to increasing consumer awareness. Research shows 90% of Americans support mandatory labeling of BE foods.

As such, the NBFDS should be considered a key customer experience and servitization tool moving forward. For many retailers and manufacturers, it can act as a spur to deliver modern products that consumers of today desire—and to bring manufacturing technologies up-to-date to meet these needs too.

In terms of additional administrative tasks and associated increased costs for the average manufacturer, retailer, or ingredient supplier, the key points of the NBFDS are as follows:

1. Disclosure: Labeling and signage changes

The NBFDS is a marketing regulation, overseen by the marketing arm of the USDA. At its core is a potential requirement to add a BE disclosure symbol or messaging to your product's labeling, or nearby signage. Retailers that stock your products may need to apply these changes if you do not (or cannot). This is likely to involve cost and logistical concerns.

2. Learning what your customers think

Whether or not consumers care about BE varies significantly depending on the marketplace. You may have to seek consumer opinion via focus groups or other research on how important they consider BE labeling to be, and its likely impact on your business and product lines. You may need to perform similar research amongst your retailers. This should then input to the nature of your response to the NBFDS.

3. Getting the correct documentation

For any food or ingredient that falls within the scope of the NBFDS, it's necessary to have supporting documentation about whether it's BE—or not. In other words, NBFDS documentation requirements may apply even if you don't use BE ingredients, or sell BE foods.

4. Ensuring supply chain traceability

Because of the requirement for documentation, you may need to gain a more in-depth knowledge of your supply chain and require suppliers to certify the BE status of ingredients or foods you purchase. Refining processes for some ingredients like soybean oil or lecithin may need to be validated. You may need to request conformance documentation.



5. Testing for BE materials

It might be necessary to test food or ingredients for BE if you are unable to source reliable documentation, or if you're unable to trust this and are concerned about potential brand damage should BE material be detected in your products by third parties.

6. Reformulating or removing foods and ingredients

You may choose to source non-BE ingredients or foods and reformulate your product(s) to avoid the labeling requirement. This could involve considerable disruption to existing processes, and logistical concerns. It may create a requirement for the food to be reassessed under existing food safety legislation from the USDA, FDA, or others.

7. Avoiding enforcement

The NBFDS is enforced by the USDA. Their penalty following an investigation is simply writing-up the findings on their website.

The real concern for enforcement comes from consumers and consumer groups if a product is found to be mislabeled. The reputational damage could be significant, and consumers may take private action (although it should be noted that the NBFDS is not related to food safety, which is covered by other FDA and USDA regulations).

It's speculated that the wording of the NBFDS could allow individual state legislators to impose penalties. Although no such measures are in place at the time of writing, this could amount to large financial penalties imposed in different markets for the period until compliance is proven, plus penalties for the period before this.

Putting technology at the heart of what you do

The route to compliance with the NBFDS is smart use of technology within your business, and beyond its walls as well. Digitization allows you to take control and increase accountability at all stages of manufacturing and retail.

It offers the most sensible and seamless way to maintain compliance. Supply chain traceability can begin in the farmer's field, and carry all the way through to the point of consumer purchase. You can track supplies and suppliers, so you can see at a glance stock levels via warehouse technologies such as barcode readers.

Using technology you can accurately and seamlessly record vital documentation of all kinds, relating not just to BE, but also to always-increasing food safety compliance, making it easy to comply with all FDA, USDA and other regulatory requirements.

You can see live views of the state of your manufacturing or retail processes, and gain financial and operational insights through advanced analytics—both real-time and historically, via dashboard and custom reports tailored specifically for your business needs. Technology ensures you can be as efficient as possible throughout all stages of manufacturing and retail.

Having a full understanding through technology means you can better predict demand, and ensure responsiveness—for today and tomorrow.

Digitization allows you to take control and increase accountability at all stages of manufacturing and retail.





Why you need this guide

Nearly all larger food manufacturers, retailers, importers, and ingredient manufacturers in the U.S. are likely to be impacted by the NBFDS because it impacts the core ingredients used in a wide variety of foods—including some ubiquitous core ingredients like oils and emulsifiers.

Non-U.S. businesses that export food to the U.S. are also likely to be impacted.

Learning about the NBFDS should be considered mandatory for Chief Finance Officers, Chief Information Officers and Chief Supply Chain Officer or Supply Chain Directors.

In this guide, we look at the law's requirements, speak to an expert working in the area, and outline solutions that manufacturers, retailers, and importers of ingredient suppliers can apply right now.

Learning about the NBFDS should be considered mandatory for Chief Finance Officers, Chief Information Officers and Chief Supply Chain Officer or Supply Chain Directors.

What the National Bioengineered Food Disclosure Standard law says

Mandatory compliance with the NBFDS is required from January 1, 2022 for all entities

In this guide, we provide a brief and simplified summary of the NBFDS. This is no substitute for seeking legal or expert advice tailored to your business.

We discuss mandatory requirements for those within scope of the standard. Voluntary disclosure is also possible for those entities that are exempt, should they wish to do so.

Deadlines and dates

The NBFDS was implemented January 1, 2020 although if your business is what the NBFDS refers to as small food manufacturers (those with \$2,500,000 to \$10,000,000 in annual receipts), the law applies only as of January 1, 2021.

Mandatory compliance with the NBFDS is required from January 1, 2022 for all entities, regardless of annual receipts. This is the date when your products entering the stream of commerce must be labeled in compliance with the standard, and appropriate records kept with regard to the BE status of food or ingredients.



Who does the NBFDS apply to?

Three different kinds of entities are mentioned within the NBFDS. These are most likely to be businesses, but could be other types of organization:



Food manufacturers:

Those that package food for human consumption and retail sale, regardless of whether they actually manufactured the food. However, if your business has annual receipts for food and non-food items of less than U.S. \$2,500,000 then you're exempted. These are classed as "very small food manufacturers" by the USDA AMS.



Importers:

Anyone who imports food for retail sale into the United States, or who imports raw agricultural products and processed foods (defined by the U.S. Customs and Border Protection as an importer).



Retailers:

Those that either package and label food for retail sale, or who sell bulk food items. However, ready-to-eat foods sold in a grocery store deli, salad bar, or hot bar (or similar) are not within the scope of the NBFDS. Similarly, restaurants or similar retail food establishments do not need to comply with the NBFDS.

Missing from the official list are food ingredient manufacturers within the industrial supply chain, who are impacted by association with the above types of businesses even if the NBFDS doesn't directly apply to them. Food manufacturers and retailers are likely to demand conformance documentation.



What are considered bioengineered foods?

Both the following characteristics are listed as guidelines to determine if a food is considered bioengineered under the NBFDS:

- It contains genetic material that has been modified through in vitro rDNA techniques.
- The modification could not otherwise be obtained through conventional breeding or be found in nature.

Foods that are BE

The NBFDS defers to the existing FDA Federal Food, Drug, and Cosmetic Act (FDCA) to define what is considered food although the two following points must also be true:

- The food must be for human consumption.
- The food must be already subject to the labeling requirements of the FDCA.

Raw produce (e.g. apples), seafood, prepared foods like breads, non-meat canned and frozen foods, snacks, desserts, and drinks are therefore all potentially subject to the NBFDS depending on ingredients. Dietary supplements and chewing gum are also potentially within the scope of the NBFDS.

The Federal Alcohol Administration Act (FAA Act) should be consulted if you manufacture, retail or import alcoholic food or drink, or ingredients. Products covered by the FAA Act are not subject to the NBFDS because of the existing FAA Act labeling provisions. This means distilled spirits, wines, or malt beverages are not subject to the NBFDS. However, other alcoholic beverages under FDA labeling jurisdiction are potentially subject to the NBFDS.

Foods listed by the USDA

The USDA AMS has defined a list of what kinds of ingredients or food that might be considered BE under the NBFDS. The AMS list is not exhaustive, and is updated yearly.

At the time of writing, the list reads as follows, with ingredients or foods with registered or trademark names listed:

- Alfalfa
- Apple (Arctic™ varieties)
- Canola
- Corn

- Cotton
- Eggplant (BARI Bt Begun varieties)
- Papaya (ringspot virus-resistant varieties)
- Pineapple (pink flesh varieties)
- Potato
- Salmon (AquAdvantage®)
- Soybean
- Squash (summer)
- Sugar beet

Derivatives of these ingredients might also be included if they continue to contain BE material following refinement (see the notes following on from this about detectability and testing). Examples could include soy oil, lecithin and corn starch.

Additionally, the act applies to foods where the first ingredient or food is fish other than catfish (e.g. seafood), or wild game and meats like venison and rabbit.

Foods not subject to the NBFDS

A number of foods that are not subject to the NBFDS, are as follows:

Most animal meats and eggs

The NBFDS does not apply to foods whose primary ingredient measured by weight is pork, beef, sheep, goat, catfish, chicken, turkey, domesticated birds, or egg products.

If egg products or any of the meats/fish listed above appears elsewhere in the ingredient list, and the ingredient list includes items that are within the scope of the NBFDS, then the NBFDS' requirements apply.

A notable exception is if the first ingredient is broth, stock, water or a similar solution. In this case you should look to the second main ingredient by weight. The food is not subject to the NBFDS, if in this case, this second ingredient is meat, catfish, poultry or egg products and is subject to one of the above acts. This means some soup and stewed meat products, as examples, are unlikely to be within the NBFDS scope.

Incidental additives

Incidental additives are not considered BE under the NBFDS.

In general, these are ingredients or foods found in insignificant amounts and have no technical or functional effect within the food.

Refined foods where BE is undetectable

If the food or ingredient has been refined to the point where the BE material is undetectable then it's not subject to the NBFDS. The refining must be using a process validated to render the modified genetic material undetectable (see below).

Thresholds

Any intentional use of BE food or ingredient requires disclosure. However, up to 5% of a food or ingredient can be a bioengineered material if its use is either inadvertent or technically unavoidable.

For example, harvesting non-BE corn may take place after harvesting BE corn, and there may still be a small amount of BE corn in the hopper.

However, USDA AMS says reasonable and customary practices must be used to keep BE and non-BE ingredients or foods separate.

BE animal feed

If a non-BE animal is fed BE feed then that does not require disclosure.



Organic food

Food certified under the National Organic Program (NOP) is exempt from the NBFDS with the exception of foods with 70% or less organically produced ingredients, because these products might contain BE ingredients.

Documentation and record-keeping

For ingredients or foods that fall within the scope of the NBFDS, it's necessary to have records that show the BE status—regardless of whether they contain BE material or not. This could be existing documentation you're already maintaining.

- Records you keep verify they're not from a BE crop or source.
- Records you keep verify the food has been refined in a validated way to make the BE material undetectable (see below).
- Certificates or analysis of testing (or other records) confirm the absence of BE material.

Proving the absence of BE might require testing of the food or ingredient(s) to confirm the absence of BE material.

For positive disclosure of BE material, the record simply needs to identify the relevant food(s) or ingredient(s).

Record keeping is vital because it is required should the USDA investigate and take enforcement action. The USDA AMS says the following existing document(s) may be sufficient:

- Invoices.
- Bills of lading.
- Inventory or supply chain records.
- Process verifications.
- Country of origin records (that is, the ingredient or food came from a country or area that doesn't allow BE production of that food or ingredient).
- Organic certifications (e.g. the food or ingredient was produced organically and certified under the **National Organic Program**).
- Laboratory test results.

If these documents do not already list the BE status of the food, you may wish to add it, or ask your supplier or other third party to do so.

The USDA AMS does not specify what records should be kept, or how. They may be kept as hard copies or digitally, and in your choice of location. However, they must be kept for two years once the product is sold.

You may need to keep some records for longer periods, such as those validating certain ongoing manufacturing processes.



Testing, refining and detectability

Testing is problematic because no specific tests are specified in the wording of the NBFDS to determine levels of BE materials in foods or ingredients.

In response to feedback, the USDA AMS published **guidelines on testing**. However, while this makes suggestions for types of test, standards, and choice of laboratories, it's down to you to "ensure the method is fit for purpose". This includes assessing whether the test can "provide an answer to a given question or requirement, such as a regulatory requirement or limit, in an effective manner."

The USDA AMS has also published **guidance on validating a refining process** that aims to have the result of removing and/or rendering undetectable BE material. Again, it's down to you (or your suppliers) to decide how to validate a process—although once this is done, then unless significant changes are made to the process, no further revalidation or testing is required.

Both testing and validating a refining process produce documentation that you need to keep for NBFDS compliance.

Disclosure and labeling requirements

If the ingredient or food contains BE ingredients as specified earlier, then you need to disclose this. This includes those retailing foods in bulk containers.

Regardless of how or where a food is retailed, disclosure can appear in one of three places:

- **Food packaging:** The disclosure can be placed adjacent to the manufacturer/distributor information. But this should not obscure or remove any other USDA/FDA disclosures that are required.
- **Principal display panel:** The signage most likely to be seen by consumers in a retail setting, such as a pricing label placed on shelving.
- **Alternate panel:** If the two above options are not possible, the disclosure can be made on another panel likely to be seen by the consumer under ordinary shopping conditions.

According to the wording of the NBFDS, the disclosure must be "of sufficient size and clarity to appear prominently and conspicuously on the label, making it likely to be read and understood by the consumer under ordinary shopping conditions."



The disclosure notification can take one of following forms.

USDA-approved symbol

The USDA AMS provides two symbols that can be used.

One reads simply “BIOENGINEERED”. This should be used for food that is a raw agricultural commodity or a processed food that only contains bioengineered ingredients.



The second reads, “DERIVED FROM BIOENGINEERING”. This should be used for food containing BE ingredients alongside non-BE ingredients.

A sensible guideline for the size of the symbol on packaging is that the text within it should be at least 1/16th inch (1.59mm) in size to ensure readability.

Printed text

If the food is a raw agricultural commodity or processed food that only contains bioengineered ingredients, the text “Bioengineered food” should be used.

If the food contains both a BE ingredient, and non-BE ingredients, the text “Contains a bioengineered food ingredient” should be used.

If the food contains multiple BE ingredients alongside non-BE ingredients, the text “Contains bioengineered food ingredients” should be used.

Online and telephone

The mentioned text or symbols can be provided online, and should appear immediately (as the first screen seen) when a user scans a code on the packaging using a digital device like a cellphone.

If this option is chosen for disclosure, the text on the packaging should read, “Scan here for more food information”, or something similar depending if a different type of technology is used.

Notably, when the consumer visits and views the online information, you should not use this as an opportunity to collect information about the consumer or their device.

If the digital disclosure option is used, a telephone number must also be provided nearby the onpackage text about scanning the code (or similar). The text should read, “Call [phone number] for more food information”. This phone number must provide the BE disclosure, 24 hours a day. A recorded message can be used.

Providing disclosure using just a telephone number is not sufficient to meet the NBFDS’ requirements (unless you’re a small manufacturer—see below). A phone number must be accompanied by online disclosure as discussed previously.

Text message

You can setup a service that immediately SMS texts information to the user in response to them texting a code to a predefined number. The disclosure text on the packaging or display panel should read: “Text [code word] to [number] for bioengineered food information.” The same text as mentioned above for the printed text disclosure should be sent to the user.

The disclosure must be of sufficient size and clarity to appear prominently and conspicuously on the label, making it likely to be read and understood by the consumer under ordinary shopping conditions.



Small food manufacturers: telephone or website

The USDA AMS refers to “small food manufacturers” as those with \$2,500,000 to \$10,000,000 in annual receipts. These have two additional options in addition to the four previously mentioned.

The first is text on packaging or the display panel that reads, “Call for more food information”. This follows the same rules as previous for telephone disclosure.

Alternatively, or in addition, small food manufacturers can use solely online disclosure, by adding text that reads, “Visit [link] for more food information”. Again, this follows the same rules as previous for online disclosure.

Small and very small packages

The USDA AMS defines small packages of those less than 40 square inches, and very small packages as those less than 12 square inches.

Small packages can use the shortened text “Scan for info”, “Text for Info”, or “Call for Info.” Other than this, the above disclosure requirements should be followed.

Very small packages can use any pre-existing web address or phone number already used on the package. The disclosure should again follow the above disclosure requirements.

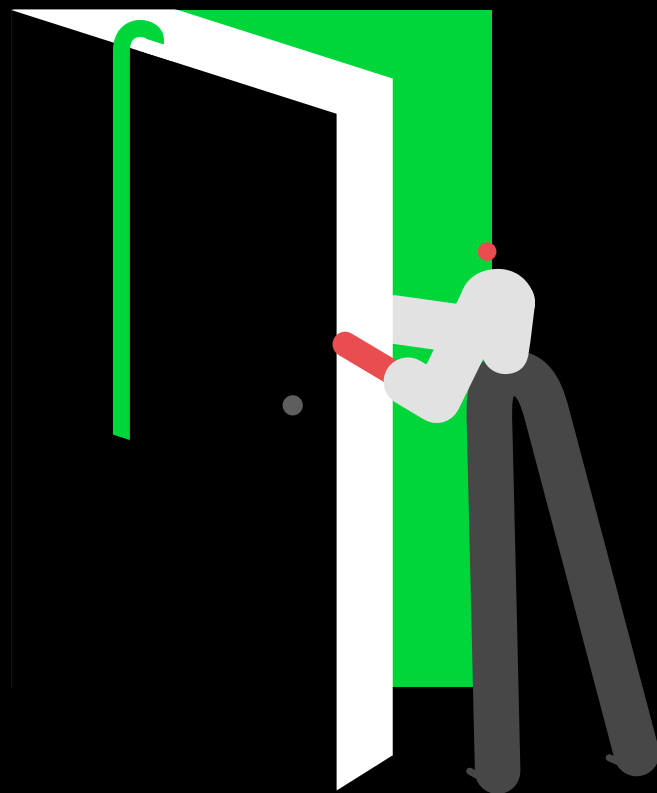
USDA enforcement

The USDA AMS will enforce the standard only if prompted to do so by a complaint it receives, at which point it will determine if investigation is required.

Investigation involves an audit of your documentation for the food(s) or ingredient(s). Notably, the USDA AMS says it does not intend to undertake any testing of foods or ingredients as part of the investigation.

You will be told of the results of the investigation and allowed an appeal hearing. Following this, you’ll be told of the USDA AMS’ final determination. A summary of the audit or investigation will be made available on the USDA AMS website.

An expert speaks: What the National Bioengineered Food Disclosure Standard means for your business



What's required of entities within the scope of the NBFDS, or affected by it, falls broadly into two areas.



Jesse Zuehlke
PhD and General Manager
at Prime Label Consultants

"The first question is figuring out if your food or ingredients might be BE," says Jesse Zuehlke, PhD and General Manager at Prime Label Consultants, out of Washington, DC.

"The second question is figuring out how you want to disclose."

Both steps, he adds, need to be driven by customers: "It becomes an exercise in understanding your consumers and understanding who your market is—and the risk to your brand."

Supply chain requirements

Aiming for better knowledge of the existing supply chain may not be sufficient. A good lens through which to view NBFDS preparations, says Zuehlke, limits liability for claims of non-compliance.

"You can setup your supplier agreement to say that, if you're purchasing soybean oil, they declare BE material has been refined out of it. Do you take their word? These are likely sufficient records for USDA, but may not prevent consumer testing and PR."

“USDA enforcement is limited to simply investigating documentation, and reporting the findings on their website. It does not undertake its own testing.”

But liability around a consumer complaint remains, he adds, even if the documentation is compliant. The supplier might be wrong, or that batch might be faulty—containing inadvertent or unavoidable material as allowed by the NBFDS, for example.

“Consumers, advocates, competitors, anyone might take your product, test it, and find BE material in there. This is a brand and reputational risk, and probably more concerning than USDA enforcement.”

USDA enforcement is limited to simply investigating documentation and reporting the findings on their website. It does not undertake its own testing.

“The surprising thing for me so far is the number of entities who recognize that their market and their consumers are very invested in whether or not they’re using BE. And so, in a lot of cases, they’re doing testing themselves. There’s more laboratory testing going on than I thought there would be.”

The risks of over-declaration

But some, Zuehlke adds, are taking an opposing approach with regard to supply chain compliance and record keeping compared to those that are testing. This is because the NBFDS wording can arguably invite what he calls “over-declaration of bioengineered ingredients”.

In other words, some entities are simply applying the disclosure with the assumption they will have to in any outcome.

“They’re not testing and they’re not really asking for support. For example, if they’re using sugar in their food product and they know it came from sugar beet, it will probably be BE. So, they don’t need to substantiate anything. They can simply label the product as BE and they’re compliant.”

This approach, he adds, remains questionable. It could be considered mislabeling or misleading. Existing food labeling regulations require you to positively prove a factor before applying labeling.

For some entities such as private label manufacturers, the sheer number of products they produce—which can range in the tens of thousands—means they’re forced to take this route because they haven’t sufficient time before the mandatory compliance date of January 1, 2022 to individually test.

“While 76% of Americans are familiar with the term GMO, only 51% are familiar with the term biotechnology.”

Customers and your marketplace

The NBFDS was created out of a demand for transparency for consumers with relation to BE foods. The consumer should therefore drive NBFDS compliance efforts.

Zuehlke’s firm specializes in speaking to consumers with relation to packaging, and he says there are two methods being applied.

“We’ve seen some market research, and some small focus groups. I know that a number of large companies are doing substantial, large-scale focus groups but we haven’t seen that data yet.”

But care needs to be taken because it’s not simply about measuring response to genetically-engineered foods.

“There’s always been terms like genetically engineered, or genetically modified. There is a consumer stigma. But when Congress enacted the NBFDS, they changed the terminology. The term ‘bioengineered’ is novel in the marketplace. It’s interesting to ask how consumers correlate this to older terms like genetically modified. The core question to ask is how they understand this new term.”

For example, research shows that while 76% of Americans are familiar with the term GMO, only 51% are familiar with the term biotechnology.¹

The second way to gauge consumer opinion, Zuehlke adds, is to run product trials with labeling applied. Voluntary compliance is possible all the way through to December 31, 2021.

“This lets us see how consumers are reacting in the real marketplace. Companies are going in, doing some labeling with their product, and sending it out to the grocery store.”

The result of this testing should speak for itself in terms of receipts or consumer feedback—either requested or ad-hoc.

¹Source: United Soybean Board.



Applying disclosure labeling

Choosing the right sort of disclosure labeling presents challenges, with each having benefits and drawbacks.

“If I were to wager”, says Zuehlke, “I think within two years of mandatory NBFDS compliance, we’ll see mostly text and digital disclosures. Least-used will probably be the USDA-approved symbol and the text message service.”

The issues for using the symbol, he explains, are technological and practical. The color version of the symbol requires four-color plates, which could increase labeling costs. Additionally, size is an issue.

For brands concerned about the impact of the disclosure, adds Zuehlke, adding simple text to the packaging is worth investigating.

“The State of Vermont previously introduced a statewide labeling law similar to the NBFDS. Anecdotally, based on the disclosure national brands applied, it seems that consumers either didn’t notice or care. But Vermont is a very small state. The NBFDS is happening on a much larger scale. We’d need to see more evaluation before assuming that will be the case now.”

Disclosing online

Digital disclosure is, says Zuehlke, one of the best options. While the choice of disclosure depends on consumers and the marketplace, digital disclosure allows flexibility.

“Your suppliers may not know if their products contain BE when you ask. But six months later, after validating their refining processes, they say that, no, there’s no BE material getting through. With digital disclosure you can simply flip a switch—change the text to say that, no, there’s no BE material.”

But online disclosure could be one of the more expensive options.

“Don’t underestimate the cost and resources necessary to maintain a landing page on the internet for every single one of your products. The NBFDS says you have to avoid tracking on that page—things like cookies—so the easiest way for most manufacturers is to use a third party. This incurs even more costs. It adds up to a significant complication.”



Technology solutions and next steps: Towards compliance with the National Bioengineered Food Disclosure Standard



Becoming and remaining compliant with the NBFDS means using technology to enable or enhance traceability and documentation.

In addition to compliance with the NBFDS and other regulations, the use of technology offers other invaluable benefits for food manufacturers, retailers and importers, such as creating servitization offerings.

The importance of traceability

Traceability is crucial for food and beverage manufacturers, as it helps document and report on compliance in a way that is effective and efficient. It provides businesses the ability to trace products as they pass through the often long and complex supply chain, potentially offering alerts if any problem arises which they can look to fix as quickly as possible.

It allows accurate record-keeping too, which is a key requirement of the NBFDS. Traceability allows businesses to verify the history and location of a product through documented and recorded verification, and can help those within the food industry significantly improve their operations. Having full real-time visibility into data can give warning about any deviation from the quality product that compliance requires.

With the vital information that traceability provides, food and beverage manufacturers can:

- Promote efficiency and improve decision making.
- Manage materials and logistics smarter.
- Arrange better supplier terms.
- Achieve optimal demand planning.
- Ensure fresh product, while keeping costs low.

“93% of manufacturing businesses see servitization as having a positive impact on their business.”

Servitization: Creating new opportunities

Recent IDG-Sage research surveying 658 director/ C-level business and IT leaders globally², found that legislative changes like the NBFDS are largely seen in a positive light by manufacturers across the globe.

The same research shows that the vast majority of manufacturing businesses (93%) see servitization as having a positive impact on their business.

So, what exactly is servitization? Closely linked with digitization, it gives businesses new opportunities to expand their product lines with services and solutions.

For food manufacturers and suppliers, servitization can mean building services that respond to increased consumer demands for knowledge of ingredients. This has clear implications for NBFDS compliance and general consumer interest in BE ingredients—and complying with the NBFDS labeling and signage requirements, such as providing online explanatory resources, is just one key servitization angle.

Servitization typically means better consumer relationships can be fostered, creating brand loyalty and delivering a very real impact for profits. For example, innovative food manufacturers and retailers are moving to subscription-based services to create reliable and predictable revenue. Servitization can even create additional and surprising revenue streams, such as factory tours or tasting sessions as part of tourism or entertainment offerings.

Technology: The key to traceability and servitization

New and emerging technologies allow your food and beverage businesses to log transactional and product data. The insights that come out of this data are at the core of traceability and effective servitization planning and creation.

Here are three common ways food manufacturers and retailers in the real world are achieving this as a business objective via technology:

1. The Internet of Things

Through the Internet of Things (IoT), devices can be connected anywhere, at any time. Using labeling technology such as radio-frequency identification (RFID) and quick response (QR) codes, allows data to be collected which tracks your product's full journey through the supply chain. Anything can be recorded—from the temperature during transport to the source of ingredients.



2. Big data analytics

Using big data analytics, your food and beverage businesses can see where a problem has occurred and stop it from continuing through the supply chain. With unplanned events and potential crises, such as contaminated products in the supply chain, you can respond quickly having identified, tracked and traced everything.

3. The cloud

Your food and beverage businesses can now take advantage of cloud solutions, with software managing aspects such as system infrastructure, operating systems, databases and applications. This allows you to spend less time and energy on repetitive admin-heavy tasks and focus more on important operations.

Unlocking compliance: Enterprise Resource Planning (ERP)

However, it's the use of modern Enterprise Resource Planning (ERP) software where those in the food manufacturing sector are creating full transparency—crucial for documenting and reporting on compliance, creating traceability and encouraging servitization efforts. ERP provides essential capabilities that allow leading food and beverage manufacturers to deal with a challenging regulatory outlook, such as the burden created by NBFDS compliance.

ERP maintains the same composition and flavor of products

Your businesses should minimize and ideally eliminate, any unknown variables that might affect compliance. Standardization breeds consistency across the organization, leading to automation opportunities when processes are documented and standardized.

ERP integrates manufacturing operations with product design

This can cut costly processes that require customized equipment and controls to manufacture the product and maintain consistent quality levels. Innovation can be fostered from both sides of your product development process, from design to manufacturing and back again.

ERP equals quality management

Having full visibility into all data can provide an early warning to potential deviations or out-of-tolerance conditions at the equipment or product level, potentially avoiding a quality problem. Having visibility in real-time requires system integration between all your enterprise applications.

ERP offers full visibility into quality data

When records are maintained manually, it becomes very difficult to manage recalls properly. ERP systems need to keep records in a central database that allows easy updating and automated data collection. Dynamic documentation would update records automatically in the event of a change in supplier or ingredient, for example.

To achieve full visibility of traceability in the supply chain, IoT, big data analytics and the cloud must be integrated into your ERP systems. They should be designed with the food and beverage manufacturer in mind—broad enough to log transactions across the supply chain, yet deep enough to offer you industry-specific functionality. These include logging of source materials, results analysis, a way to conduct preventative actions and adherence to strict regulations.





Preparing for the NBFDS with technology

Food manufacturers, retailers, importers and industrial suppliers should be looking at the following, if they haven't already:

Building compliance and traceability into their processes

This can only be achieved by effective use of ERP, as well as technologies like the IoT as mentioned earlier. Legacy ERP systems may not be sufficient for modern compliance.

Implementing a central repository of relevant

compliance laws and regulations to stay current with changes in requirements. Including but not limited to the NBFDS. This makes the information accessible to employees, regulators and partners. Again, ERP software will make it easier to become and stay compliant.

Digitizing the document management process

With the central library of documentation within your ERP software, you're never more than a click away from being able to source and potentially provide necessary documentation to regulatory authorities.

Implementing a business management solution that can build a foundation for process control and automation

Technology must be linked throughout your enterprise, and should reach beyond its walls to ensure supply chain traceability via Electronic Data Interchange (EDI). You should ensure a business management solution is integrated and interoperable to eliminate data silos, particularly for solutions affecting quality and compliance. Software tools should be kept up-to-date so they can handle new reporting requirements from regulations and avoid non-compliance.

Seven steps towards digitization of food manufacturing

Moving to an ERP solution, or upgrading a legacy system that's reached the end of its useful life, is no small undertaking.

The first steps are to consider and document your requirements across the functions within your business, and to approach a vendor who is able to demonstrably meet your needs today—and tomorrow.

Here are some questions to ask:

1. What are your needs for Electronic Data Interchange (EDI)?

What requirements are there to communicate with outside systems, such as those of your suppliers? Speak to your suppliers and customers to learn how best to meet this need, and see what solutions they're currently using. Use this information to inform your own planning for technological implementation.

2. What reporting needs do you have across your departments, and across stakeholders?

Modern ERP systems can provide not just historical data, but live up-to-the-minute data. Ask your department leads and stakeholders to outline what their ideal data reporting and dashboards would look like—and ensure your digitization investment can deliver quickly and accurately.

Can the digitization track costs, and help avoid waste? Can it enhance allergen and expiry date management? Can it provide seasonal financial reporting to ensure efficiency and effectiveness across the year?

The data is already being generated minute-by-minute. You simply need to harness it—and doing so can power growth and increase efficiencies.

3. What errors are being made—and can technology stop this?

For example, duplicate data entry is one of the biggest hindrances to efficient food manufacturing and retailing. Examine your processes all the way through, from warehouse, to manufacturing plant, to retail shelf or customer dispatch. Learn where the weaknesses lie—and where technology such as handheld scanners or IoT devices can introduce accuracy and accountability.

4. Will your solution scale when you need it to?

It's vital when investing in technology to ensure it meets not just your needs today, but also your needs tomorrow. Suppliers and customer demands are constantly shifting, and new compliance demands arrival frequently. Ensure you examine all practices and departments to ensure the technology can grow with your business.



5. Can digitization meet multiple legislative frameworks?

Many food manufacturers import and export, and each area has different requirements. Can any proposed ERP solution and associated technology make it seamless to expand your sales and marketing beyond just the U.S.? Can your technology just as easily make it possible to comply with E.U. or Canadian compliance legislation around BE as you can with the NBFDS?

6. Can the cloud benefit your working practices?

The events of 2020 have shown that being able to access data from any location—such as a temporary home office—can allow for effective business continuation. But more than this, having access through mobile devices from any location can revolutionize sales and marketing teams, as well as your buying and sourcing operations.

Legacy ERP systems or even spreadsheets will likely not be effectively cloud-enabled—and this is one of their primary weaknesses that can hold businesses back. The cloud delivers flexibility, which is vital in an industry where anything can happen.

7. Can you better handle recalls?

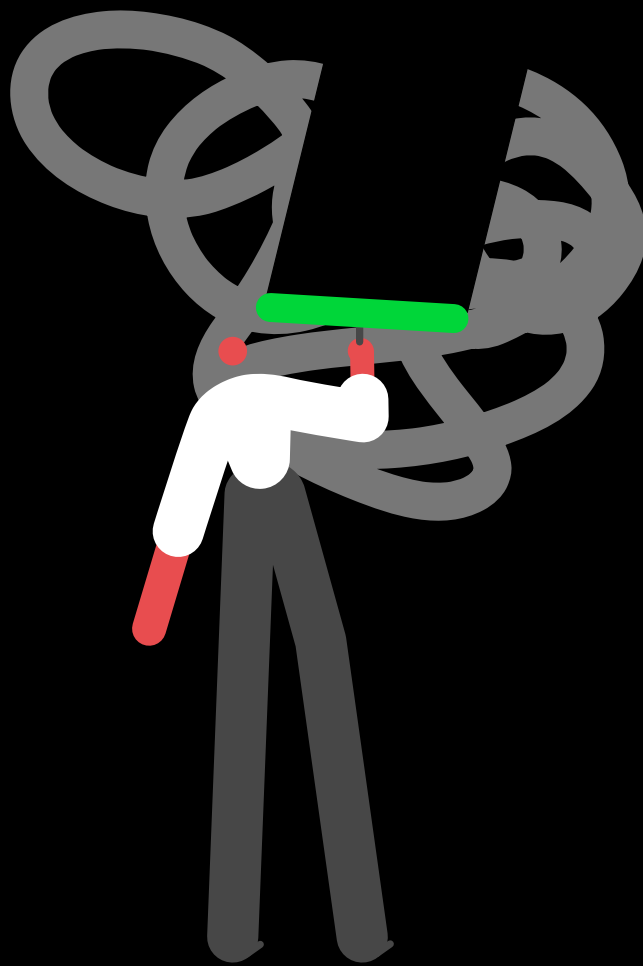
It's the biggest threat to food and beverage profitability, but effective use of technology can reduce the pain and reduce the risk to profits created by a product recall. Look at existing recall planning or implementation in order to determine where better use of digitization—for example, better traceability and granular knowledge of your supply chain—could mean a smoother and more effective recall process.

Conclusion

Although the rules of the National Bioengineered Food Disclosure Standard appear straightforward, applying them brings considerable challenges.

Ultimately, decisions about what actions to take are informed by your consumers, who should be placed first in decision-making processes.

- Is your legacy ERP system good enough for the job of modern-day compliance and legislative demands like the NBFDS? How can modern technology enhance traceability and introduce servitization to what you do? How much easier and more seamless could be your entire manufacturing and marketing processes if you simply used better modern technology?
- Are your buyers likely to care about BE? Does your food invite label-reading by consumers? How can you educate consumers about the NBFDS? What education can you expect to come from other sources (e.g. TV, online, print media)—and how will it affect your products?
- How will your products be affected? If you wish to avoid BE-labeling, it may be necessary to source different ingredients and reformulate. Can your business and its supply chain become compliant in time for the January 1, 2022 mandatory implementation date? There are ambiguities around testing, validated refining processes and documentation that you might require help with—which will require working far in advance.
- How is the inventory that you purchase today likely to be impacted upon the mandatory implementation date? How will the process of collecting documentation work? Can you continue to work with your existing supply chain—and how can you increase traceability?





Why Sage X3?

Sage X3 provides a faster, more intuitive and tailorable business management solution for your growing enterprise, delivering favorable ROI and a more personalized experience for businesses than traditional ERP systems.

The ability to support multiple adjacent verticals allows Sage X3 to support the entire value chain.

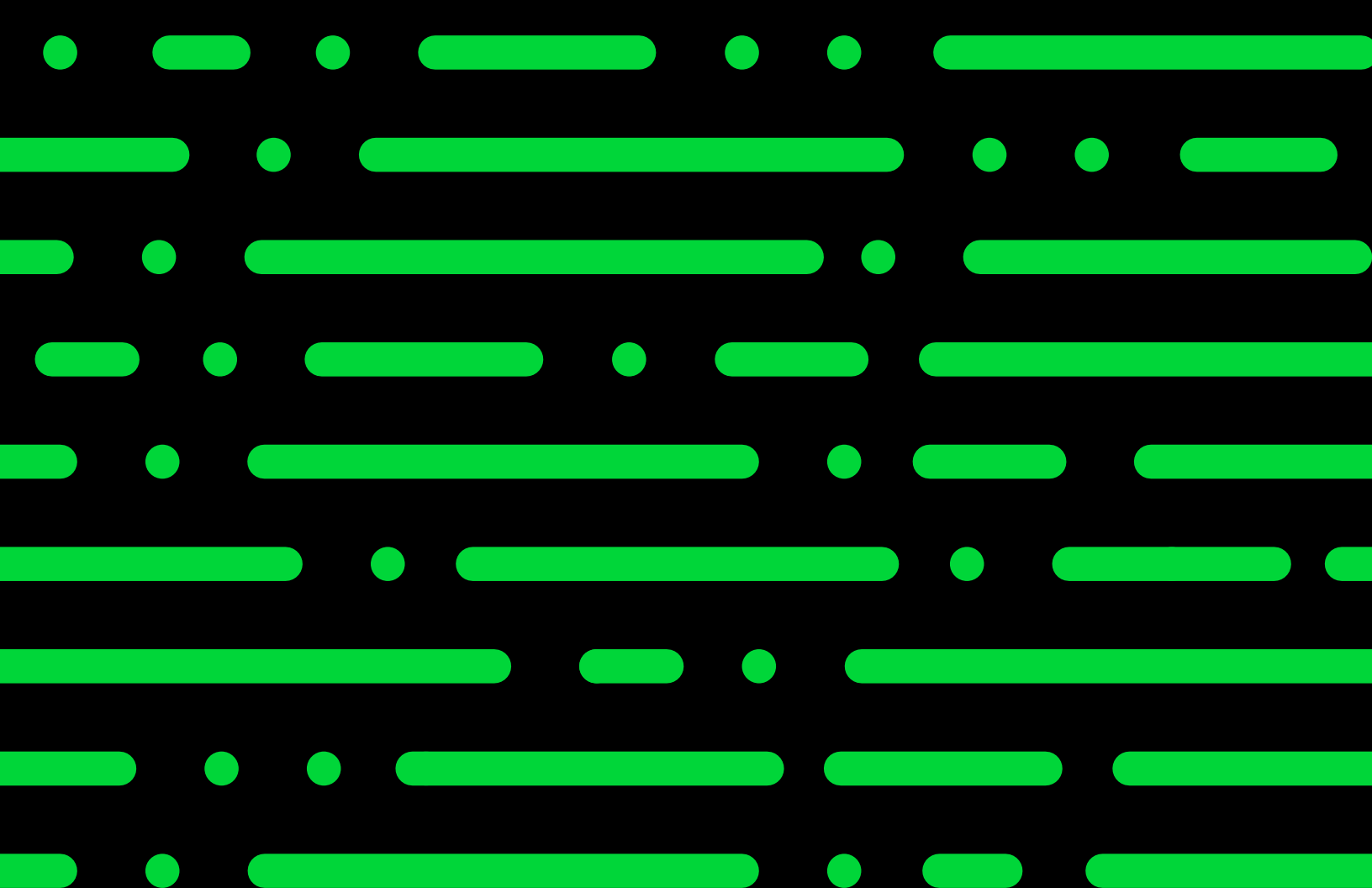
Sage X3 delivers value across multiple industries for large thriving customers in over 100 countries around the world, supported by over 480 business partners and more than 1,300 certified consultants.

Businesses can embrace change at speed through faster, more intuitive, and better tailored solutions than conventional ERP. They can retain their competitive advantage by increasing their agility and embracing change.

X3 enables comprehensive business management capabilities from supply chain management to manufacturing, through to human resource and payroll management capabilities. This is further complemented by over 50 add-on solutions providing additional industry-specific functionality.

Along with comprehensive multinational business management, Sage X3 offers support for 18 different industry verticals ranging from food and beverage manufacturing through to industrial machinery manufacturing and FMCG distribution.





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