

# Infant Formula

PROVENANCE SCIENCE SERVICE

**In 2023 Source Certain analysed key infant formula brands to determine if their origin can be verified using scientific provenance verification technology, TSW Trace®.**

In 2023, Source Certain led a world-first initiative to confirm that TSW Trace® verification technology could be used to accurately verify the manufacturing origin of infant formula.

## THE DETAILS

Formula and milk powder supply chains have faced a spectrum of issues over the last decade. From mislabelling and misrepresentation of origin to adulteration, and in some cases, complete substitution, these have a profound impact on availability, product safety, brand and industry value, and consumer trust.

In 2023, Source Certain developed a program to demonstrate the ability of scientific provenance verification technology, TSW Trace, to verify the origin and differentiate various brands and batches of commercially available infant formula.

## SCIENTIFIC PROVENANCE VERIFICATION

TSW Trace® is the proprietary scientific solution that underpins our provenance science services. It utilises trace element and stable isotope analysis to determine a unique chemical profile, or 'signature', for a reference sample. The signature can be referenced at a later point to verify an origin claim for a product claiming to come from the same location as the original sample.



**Chemical profiling of naturally grown or manufactured material is one of the most robust methods available to enhance supply chain traceability for organic and inorganic products.**



### PROGRAM DETAILS

- Infant formula was sourced from 14 producers globally.
- Several tins from both the same batch and different batches were analysed, and the results were assessed using multivariate analysis.
- The results enable verification of source – the geographical location and the batch of product manufactured.

The program determined that brands and origin are easily discriminated.

### PROGRAM OUTCOMES

- As the de-identified graph on the right indicates, individual brands are easily discriminated.
- Timestamped tins from a single brand can also be discriminated.
- The technology also showed discrimination between tins produced 2 hours apart.
- Formula of an unknown origin was verified to its brand and timestamp of origin. This is useful in cases of recall but also for overcoming market access issues.

