



Canadian Food
Inspection Agency

Agence canadienne
d'inspection des aliments

Phthalates in Selected Foods – April 1, 2021 to March 31, 2022

Food chemistry – Targeted surveys – Final report



Également disponible en français sous le titre :

Présence de phtalates dans certains aliments – du 1 avril 2021 au 31 mars 2022

Published by the Canadian Food Inspection Agency (CFIA)

1400 Merivale Road

Ottawa, ON K1A 0Y9

inspection.canada.ca

© His Majesty the King in Right of Canada, as represented by the Minister of Health, 2026.

Publication date: June 2026

Catalogue No.: A104-686/1-2026E-PDF

ISBN: 978-0-660-99633-2

This document is available in alternative formats upon request.

Summary

Targeted surveys provide information on potential food hazards and enhance the Canadian Food Inspection Agency's (CFIA's) routine monitoring programs. These surveys provide evidence regarding the safety of the food supply, identify potential emerging hazards, and contribute new information and data to food categories where it may be limited or non-existent. They are often used by the agency to focus surveillance on potential areas of higher risk. Surveys can also help to identify trends and provide information about how industry complies with Canadian regulations.

Phthalates (also called plasticizers) are chemicals used to make plastics more flexible and harder to break. The major source of phthalate exposure is eating and drinking foods that have been in contact with plastic containers and/or foods containing phthalates. Exposure to phthalates is of concern, as studies have linked these substances to reduced reproductive health and development in animal studies. In people, increased levels of phthalates are associated with adverse health effects, for example obesity and reduced masculinization in newborn boys. For certain phthalates – di(2-ethylhexyl) phthalate (DEHP), dibutyl phthalate (DBP) and diisobutyl phthalate (DIBP) – food is thought to be the main exposure source. Increased phthalate levels in people were found to be associated with the consumption of fatty foods^{0.2.3}.

This targeted survey generated additional surveillance data regarding phthalate levels in selected foods on the Canadian retail market. A total of 250 domestic and imported samples of dairy products, fats and oils, meats, and vegan products were collected and tested for the presence of 6 phthalates. Of these samples, 231 (92%) did not contain detectable levels of phthalates at levels above the limit of detection (LOD) of 0.2 parts per million (ppm) for all phthalate forms. The phthalate levels ranged from 0.3 ppm to a maximum of 3.8 ppm. Overall, the levels detected and the detection rates were lower than those observed in previous survey years.

There are no regulations in Canada for phthalate levels in food. All levels of phthalate found in the products tested in this survey were evaluated by Health Canada and deemed safe for consumption by Canadians; no product recalls were required.

What targeted surveys are

Targeted surveys are used by the CFIA to focus its surveillance activities on areas of highest health risk. The information gained from these surveys provides support for the allocation and prioritization of the agency's activities to areas of greater concern. Originally started as a project under the Food Safety Action Plan (FSAP), targeted surveys have been embedded in our regular surveillance activities since 2013. Targeted surveys are a valuable tool for generating information on certain hazards in foods, identifying and characterizing new and emerging hazards, informing trend analysis, prompting and refining health risk assessments, highlighting potential contamination issues, as well as assessing and promoting compliance with Canadian regulations.

Food safety is a shared responsibility. We work with federal, provincial, territorial and municipal governments and provide regulatory oversight of the food industry to promote safe handling of foods throughout the food production chain. The food industry and retail sectors in Canada are responsible for the food they produce and sell, while individual consumers are responsible for the safe handling of the food they have in their possession.

Why the survey was conducted

Phthalates (also called plasticizers) are chemicals used to make plastics more flexible and harder to break. They are commonly used in PVC (polyvinyl chloride plastics). They have a wide variety of industrial uses that include the manufacture of household and consumer goods such as lubricating oils, solvents, personal care products and food packaging. Phthalates can migrate from plastic food packaging and from the gaskets of lids for glass containers into foods, particularly those foods that are oily or that have a high fat content. Phthalates can also migrate into food before it is packaged, while in contact with food contact materials during processing. Ready-to-eat meals and vegetable fats and oils were identified as commodities with elevated levels of phthalates. The aim of this survey is to collect further data on these commodity types.

Exposure to phthalates is of concern, because these substances are linked to reduced reproductive health and development in animal studies. In people, increased levels of phthalates are associated with adverse health effects, for example obesity and reduced masculinization in newborn boys. Phthalates encompass a broad range of compounds. For certain phthalates, food is believed to be the main source of exposure. Increased phthalate levels in human blood and urine have been associated with the consumption of specific foods, especially fatty foods^{0,2,3}. DEHP is the most commonly used and best-studied of the phthalates². Recently, a dietary exposure assessment to DBP, benzyl butyl phthalate (BBP), DEHP and diisonyl phthalate (DINP) was carried out by the European Food Safety Authority (EFSA) where the concentration is expressed as DEHP equivalents³. In this survey, 6 phthalates were examined. They included BBP, DBP, di-n-octylphthalate (DNOP), DEHP, DINP and diisodecyl phthalate (DIDP). The phthalate concentration is reported as the sum of the concentrations of all phthalate forms observed.

The main objectives of this targeted survey were to generate additional baseline surveillance data on the level of phthalates in products available on the Canadian retail market, and to compare the phthalate levels in foods in this survey with that of previous targeted surveys.

What we sampled

A total of 250 domestic and imported dairy products (butter, cheese and milk), fats and oils, meats, and vegan products (milk alternatives, vegan meat and cheese) were sampled between April 1, 2021 and March 31, 2022. Samples of products were collected from local/regional retail locations located in 6 major cities across Canada. These cities encompassed 4 Canadian geographical areas:

- Atlantic (Halifax)
- Quebec (Montreal)
- Ontario (Toronto, Ottawa)
- West (Vancouver and Calgary)

The number of samples collected from these cities was in proportion to the relative population of the respective areas.

Table 1. Distribution of samples based on product type and origin

Product type	Number of domestic samples	Number of imported samples	Number of samples of unspecified ^a origin	Total number of samples
Dairy products	35	5	30	70
Fats and oils	10	27	18	55
Meat	23	2	5	30
Vegan products	36	27	32	95
Total	104	61	85	250

Table notes

^a Unspecified refers to those samples for which the country of origin could not be assigned from the product label or available sample information.

How samples were analyzed and assessed

Samples were analyzed by an ISO/IEC 17025 accredited food testing laboratory under contract with the Government of Canada. The method quantified 6 phthalates; the phthalate concentration is reported as the sum of the concentrations of all phthalate forms observed. The results are based on the food products as sold and not necessarily as they would be consumed.

Currently, no maximum level, tolerance, or standard has been established by Health Canada for phthalate levels in food; therefore, compliance with numeric Canadian regulations was not evaluated in this survey. The European Union has set migration limits for phthalates from food

contact materials: 0.3 mg per kg of food for BBP, 1.5 mg per kg of food for DEHP, 9 mg per kg of food DINP and DIDP, and 30 mg per kg of food for DBP³. The United States has set a limit of 0.006 milligram per liter (0.6 ppb) in bottled water⁴.

In the absence of a specific maximum level, the levels of phthalates detected were assessed by Health Canada on a case-by-case basis using the most current scientific data available.

Results of the survey

A total of 250 domestic and imported dairy products, fats and oils, meats, and vegan products were tested in this survey. Of these samples, 231 (92%) did not contain levels of phthalates at levels above LOD of 0.2 ppm for all phthalate forms. The concentration, reported as the sum of the concentrations of all phthalate forms observed, ranged from 0.3 ppm to 3.8 ppm. The highest phthalates level was detected in a sample of a virgin coconut oil. Fats and oils had highest detection rate at 13% compared to other product types.

The most prominent phthalate detected were DINP found in 9 of samples and DEHP found in 8 samples at an average concentration of 0.8 ppm and 1.6 ppm, respectively. Only one sample had more than one phthalate detected.

Table 2. Summary of phthalates testing

Product type	Number of samples	Number of samples with detected levels (%)	Minimum (ppm)	Maximum (ppm)	Average ^b (ppm)
Dairy products	70	1 (1)	0.3	0.3	N/A ^c
Fats and oils	55	7 (13)	0.6	3.8	1.2
Meat	30	1 (3)	0.8	0.8	N/A ^c
Vegan products	95	10 (11)	0.3	2.6	1.1
Total	250	19 (8)	0.3	3.8	1.1

Table notes

^b Only positive results were used to calculate the average phthalate levels.

^c Average not available (N/A) as only one value was obtained.

What the survey results mean

The main objective of this targeted survey was to expand upon baseline data regarding the levels of phthalates in selected foods on the Canadian retail market. Of the 250 samples tested, 19 (8%) tested positive for phthalates. The levels of phthalates found in this targeted survey were compared to those previously found in similar product types⁵. The results of previous survey years are summarized in Table 3 below.

Both the average and maximum levels of phthalates decreased during the last 2 survey years

for most products types. The overall detection rate decreased from 22% in the 2012-2017 survey years to 7% and 8% in 2020 and this survey year, respectively.

The greatest decrease was observed for oils; the levels of phthalates as well as the detection rates, were significantly higher in the 2013, 2014 and 2015 survey years. Although some differences may be due to the specific type of product tested or to the sample size; in some instances, the same brands of products tested were observed to have significantly lower phthalate levels. This suggests mitigation strategies during the manufacturing process intended to reduce phthalate levels may be occurring.

Table 1. Minimum, maximum and average concentration of phthalates from various survey years

Product type	Survey year	Number of samples	Number of samples with detected levels (%)	Minimum (ppm)	Maximum (ppm)	Average ^d (ppm)
Dairy products (butter/cheese/milk)	2021	70	1 (1)	0.3	0.3	N/A ^e
Dairy ^f	2016	425	58 (14)	0.50	8.51	1.44
Dairy ^f	2015	148	14 (9)	0.50	6.98	2.24
Dairy ^f	2014	148	25 (17)	0.51	17.7	2.94
Dairy ^f	2013	40	5 (13)	0.29	8.18	2.10
Fats and oils	2021	55	7 (13)	0.6	3.8	1.2
Oils	2020	250	31 (12)	0.2	3.4	0.86
Fats and oils ^f	2016	76	1 (1)	n/a	0.84	n/a
Fats and oils ^f	2015	237	60 (25)	0.51	1630	48.5
Fats and oils ^f	2014	267	79 (30)	0.60	2610	80.7
Fats and oils ^f	2013	80	47 (59)	0.26	1700	90.6
Meat	2021	30	1 (3)	0.8	0.8	N/A ^e
Meat ^f	2017	150	8 (5)	0.60	6.71	1.94
Vegan products	2021	95	10 (11)	0.3	2.6	1.1
Vegan products	2018	391	19 (5)	0.50	24.00	3.61

Table notes

^d Only positive results were used to calculate the average phthalate levels.

^e Average not available (N/A) as only one value was obtained.

^f Part of 2012 to 2017 report.

Currently, no maximum level, tolerance, or standard has been established by Health Canada for phthalate levels in food and therefore, compliance with a numerical standard was not evaluated in this survey. All levels of phthalate found in the products tested in this survey were evaluated by Health Canada and deemed safe for consumption by Canadians.

References

1. Muncke, J. (2012). [Phthalates](#). Food Packaging Forum.
2. [Scientific Panel on Food Additives, Flavourings, Processing Aids and Materials in Contact with Food. Opinion of the Scientific Panel on Food Additives, Flavourings, Processing Aids and Materials in Contact with Food \(AFC\) on a request from the Commission related to Bis\(2-ethylhexyl\)phthalate \(DEHP\) for use in food contact materials.](#) (2005). EFSA Journal 243, pp. 1-20.
3. [Public Consultation on EFSA's draft assessment of five phthalates used in plastic food contact materials.](#) (2019). European Food Safety Authority.
4. [Guidance for Industry: Bottled Water Quality Standard: Establishing an Allowable Level for di\(2-ethylhexyl\)phthalate; Small Entity Compliance Guide.](#) (2015). United States. Food and Drug Administration.
5. 2012-2018 Phthalates in Selected Foods. Canada. Canadian Food Inspection Agency. [unpublished data]