

| _ | |
|---|--|
| | |
| | |
| | |
| | |
| | |
| | |

REPLACE TRANS FAT: AN ACTION PACKAGE TO ELIMINATE INDUSTRIALLY PRODUCED TRANS-FATTY ACIDS

MODULE 4: ASSESS

How-to guide for trans fat surveillance



REPLACE trans fat: an action package to eliminate industrially produced trans-fatty acids. Module 4: Assess. How-to guide for trans fat surveillance

ISBN 978-92-4-001086-4 (electronic version) ISBN 978-92-4-001087-1 (print version)

This publication was originally published under WHO reference number WHO/NMH/NHD/19.15.

© World Health Organization 2020

Some rights reserved. This work is available under the Creative Commons Attribution NonCommercial-ShareAlike 3.0 IGO licence (CC BY-NC-SA 3.0 IGO; <u>https://creativecommons.org/licenses/by-nc-sa/3.0/igo</u>).

Under the terms of this licence, you may copy, redistribute and adapt the work for non-commercial purposes, provided the work is appropriately cited, as indicated below. In any use of this work, there should be no suggestion that WHO endorses any specific organization, products or services. The use of the WHO logo is not permitted. If you adapt the work, then you must license your work under the same or equivalent Creative Commons licence. If you create a translation of this work, you should add the following disclaimer along with the suggested citation: "This translation was not created by the World Health Organization (WHO). WHO is not responsible for the content or accuracy of this translation. The original English edition shall be the binding and authentic edition".

Any mediation relating to disputes arising under the licence shall be conducted in accordance with the mediation rules of the World Intellectual Property Organization (http://www.wipo.int/amc/en/mediation/rules/).

Suggested citation. REPLACE trans fat: an action package to eliminate industrially produced trans-fatty acids. Module 4: Assess. How-to guide for trans fat surveillance. Geneva: World Health Organization; 2020. Licence: <u>CC BY-NC-SA 3.0 IGO</u>.

Cataloguing-in-Publication (CIP) data. CIP data are available at http://apps.who.int/iris.

Sales, rights and licensing. To purchase WHO publications, see <u>http://apps.who.int/bookorders</u>. To submit requests for commercial use and queries on rights and licensing, see <u>http://www.who.int/about/licensing</u>.

Third-party materials. If you wish to reuse material from this work that is attributed to a third party, such as tables, figures or images, it is your responsibility to determine whether permission is needed for that reuse and to obtain permission from the copyright holder. The risk of claims resulting from infringement of any third-party-owned component in the work rests solely with the user.

General disclaimers. The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of WHO concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.

The mention of specific companies or of certain manufacturers' products does not imply that they are endorsed or recommended by WHO in preference to others of a similar nature that are not mentioned. Errors and omissions excepted, the names of proprietary products are distinguished by initial capital letters.

All reasonable precautions have been taken by WHO to verify the information contained in this publication. However, the published material is being distributed without warranty of any kind, either expressed or implied. The responsibility for the interpretation and use of the material lies with the reader. In no event shall WHO be liable for damages arising from its use.

CONTENTS

| Acknowledgements | | |
|---|-----------------------|----|
| REPLACE action package | | |
| 1. | Background | 6 |
| 2. | Assessment goal | 6 |
| 3. | Assessment type | 7 |
| 4. | Amount of TFA in food | 7 |
| 5. | Population TFA intake | 17 |
| 6. | Publishing results | 20 |
| References | | |
| ANNEX 1. Food categories tested in earlier studies | | |
| ANNEX 2. Criteria for selecting a laboratory to conduct TFA analysis 26 | | |

WEB RESOURCES

- > Food analysis: lab protocol
- Background discussion paper on trans fat assessment in food: summary of analytical methods and examples of their uses
- > Blood analysis: survey protocol
- > Blood analysis: laboratory protocol
- Background discussion paper on trans fat assessment: expert consultation on assessment of trans fat in food and human samples, meeting report
- > FEEDCITIES project protocol

ACKNOWLEDGEMENTS

The REPLACE modules benefited from the dedication, support and contributions of a number of experts from the World Health Organization (WHO); Resolve to Save Lives (an initiative of Vital Strategies); Vital Strategies; Global Health Advocacy Incubator (a programme of the Campaign for Tobacco-Free Kids); and the United States Centers for Disease Control and Prevention. WHO thanks the contributing organizations and individuals for their technical inputs to the development of some or all of the modules of the REPLACE action package. WHO also thanks the numerous international experts who contributed their valuable time and vast knowledge to the development of these modules.



REPLACE ACTION PACKAGE

Elimination of industrially produced *trans*-fatty acids (TFA) from the global food supply by 2023 is a priority target of the World Health Organization (WHO). The REPLACE action package provides a strategic approach to eliminating industrially produced TFA from national food supplies, with the goal of global elimination by 2023. The package comprises:

- > an overarching technical document that provides a rationale and framework for this integrated approach to TFA elimination;
- > six modules; and
- > additional web resources to facilitate implementation.

The REPLACE modules provide practical, step-by-step implementation information to support governments to eliminate industrially produced TFA from their national food supplies. To achieve successful elimination, governments should implement best-practice legal measures (outlined in modules 3 and 6). Strategic actions outlined in the other modules are designed to support this goal, but it may not be necessary to implement each module.

The modules will be most useful to national governments, including policy-makers, food control or safety authorities, and subnational government bodies that advocate for, and enforce, policies relating to nutrition or food safety. Other audiences that may find these modules and accompanying web resources useful include civil society organizations, academic and research institutions, nutrition scientists and laboratories, and food industry associations and food companies.

MODULES OF THE REPLACE ACTION PACKAGE

| SIX STRATEGIC ACTION AREAS | | OBJECTIVE |
|----------------------------|---|---|
| RE | REVIEW dietary sources of industrially produced TFA and the landscape for required policy change | Introduce the REPLACE action package, and provide guidance on initial scoping activities and drafting of a country roadmap for TFA elimination. Initial scoping activities rely on information that is already known, or can be obtained through desk review or discussions with key stakeholders, with reference to other modules as needed |
| Ρ | PROMOTE the replacement of industrially produced TFA with healthier oils and fats | Describe oil and fatty acid profiles, and available replacement oils and fats, including feasibility considerations and possible interventions to promote healthier replacements |
| L | LEGISLATE or enact regulatory actions to eliminate industrially produced TFA | Describe policy options and the current regulatory framework to eliminate industrially produced TFA. Provide guidance on assessment steps to guide policy design, and development of regulations suitable to the country context or updating of the existing legal framework to match the approach recommended by the World Health Organization |
| A | ASSESS and monitor TFA content in the food supply and changes in TFA consumption in the population | Describe the goals and methods for TFA assessment. Provide guidance on designing and carrying out a study of TFA in food and human samples |
| C | CREATE awareness of the negative health impact of TFA among policy-makers, producers, suppliers and the public | Describe approaches to advocacy and communications campaigns to support policy action. Provide guidance on key steps to design and implement effective advocacy and communications campaigns, and evaluate progress |
| Ε | ENFORCE compliance with policies and regulations | Describe TFA policy enforcement approaches, offences and roles. Provide guidance on mapping existing and creating new enforcement powers and mechanisms, public communications, penalties, funding and timelines |

1. BACKGROUND

To achieve the target of eliminating industrially produced TFA from the global food supply by 2023, it is critical for countries to know how much TFA is consumed and how much is in the food supply, and to monitor the country's progress towards elimination and replacement as legislative or regulatory efforts are implemented. This module provides basic guidance to plan a TFA assessment in a country. More detailed protocols can be found in the REPLACE web resources.

2. ASSESSMENT GOAL

There are three primary purposes for a country to assess the level of TFA in the food supply and the level of TFA intake in the population:

- > to raise awareness to spur action;
- > to establish baseline TFA levels, overall and by food type; and
- > to monitor changes over time, particularly after regulations or legislation are implemented.

The assessment goal will depend on a number of factors including:

- what is already known about TFA in the country (for example, existing studies, food databases)
- resources available to conduct an assessment both financial resources and human and laboratory capacity to conduct assessments involving food analysis and/or blood sample analysis
- > the level of public and policy-maker awareness of the health effects of TFA, and their level of support for action.

Module 1 provides guidance on how to gather the information above to inform the development of a country-specific roadmap for eliminating industrially produced TFA.

Box 1 provides a case study of a country's assessment of TFA in food and TFA intake.

BOX 1. USING ASSESSMENT DATA TO SPUR ACTION IN DENMARK

After a study was published in the early 1990s showing that TFA consumption increases the risk of coronary heart disease (Willett et al., 1993), the Danish Nutrition Council began to monitor TFA in food and TFA intake (Stender et al., 1995). In 2001, the Council reported that more than 50,000 Danes were at high risk of coronary heart disease based on their TFA intake. The major sources of TFA in Denmark included margarine, packaged snack products, bakery products and confectionery items (Stender & Dyerberg, 2001). These findings attracted significant media attention and led to popular support to limit industrially produced TFA. In 2003, Denmark became the first country in the world to take legal action to restrict TFA, passing a law to limit industrially produced TFA to no more than 2% of the oils and fats in products.

Table 1. TFA assessment methods

| TYPE OF ASSESSMENT | ASSESSMENT METHODS | OUTPUTS |
|--|--|---|
| TFA content in food supply, by food type | Analysis of fatty acids in foods (laboratory testing) Evaluation of food product labels, if available | Levels of TFA in foods, organized by food sector, category and geography Identification of major food sources of TFA Change in TFA (and other fatty acids) in food supply Can support assessment of food manufacturer compliance with existing regulations (see module 6) |
| TFA intake | Analysis of fatty acids in blood samples (laboratory testing) Dietary intake (questionnaires) | Estimated population levels of exposure to TFA (blood) Estimated levels of population TFA intake, enabling comparison with WHO recommendation of less than 1% of total energy intake (dietary intake questionnaire) Major sources of TFA intake in the population (dietary intake questionnaire) Change in TFA and other fatty acid intake/exposure Differences in TFA intake/exposure among subpopulations |

3. ASSESSMENT TYPE

TFA can be monitored either in food or in the population. Food assessment should be the first priority in all countries. Population assessment is optional, but can be very useful to understand the impact of regulations on intake (total amount consumed) or exposure (amount in blood samples – a proxy for intake). Population assessment can be done through population surveys that include either a dietary questionnaire or a blood test for TFA exposure.

Both food and population assessments (Table 1) can establish a baseline value, be used to monitor change over time and raise awareness (of the level of TFA present in foods or the level of population intake of TFA). Changes after a law or regulation is passed should be monitored via food assessment and can be validated by documenting the change in exposure in population surveys. Population assessments using dietary questionnaires require data on TFA levels in foods.

4. AMOUNT OF TFA IN FOOD

TFA in food can come from three sources:

- > partially hydrogenated oils (PHO)
- > processing and heating of oils and fats
- > foods derived from ruminant animals (dairy and meat).

Most TFA restrictions exclude TFA from ruminants (usually around 2-5% of fat is TFA) (Wu et al., 2017). The TFA content of PHO (typically 25-45%) is much higher than that in ruminant-derived foods or resulting from cooking or processing (Mozaffarian & Clarke, 2009; Doell et al., 2012; Bhardwaj et al., 2016). This section, therefore, discusses assessment of TFA content in foods likely to be made with PHO or mixed foods. (Note: Levels of TFA derived from processing depend on the methods used and may be higher in some regions than others.)

Box 2 below describes the main steps involved in defining the TFA content of food.

BOX 2. KEY STEPS FOR SURVEILLANCE OF TFA CONTENT OF FOOD

- 1. Determine the goal of the assessment.
- 2. Identify probable sources of TFA in the food supply.
- 3. Collect food label data on saturated fatty acids (SFA) and TFA, if available.
- 4. Design the sampling plan.
- 5. Collect food samples.
- 6. Analyse TFA and SFA in food samples.
- 7. Create and maintain a database of TFA nutrient label data and analysed contents.ª
- 8. Assess changes over time and/or overall compliance.^a

^aDescribed in Section 6: "Publishing results"

4.1 STEP 1: DETERMINE THE GOAL OF THE ASSESSMENT

The first step is to determine the goal of the assessment so that the food sampling, analysis and data collection plans (Box 2, steps 3-6) are designed appropriately to achieve the goal with the resources available. This section focuses on TFA analyses in food where measuring TFA levels in food is the end goal; TFA food analyses to inform dietary surveys of TFA intake are addressed briefly in section 5.2: "Dietary surveys". Possible goals include the following.

RAISING AWARENESS TO SPUR ACTION

A small study is usually sufficient to raise awareness of TFA in the food supply. Examples in the scientific literature (see Boxes 3a and 3b) including strategically selecting:

- > a small number of food categories (for example, oils and fats such as shortening, margarine and others likely to contain PHO, or specific packaged foods that can be purchased at a grocery store); or
- > a single food sector, depending on the most likely sources of TFA (for example, packaged

预览已结束, 完整报告链接和二维码如下:



https://www.yunbaogao.cn/report/index/report?reportId=5 24400