

Fifteenth meeting of the WHO Action Network on Salt Reduction in the Population in the WHO European Region

Bern, Switzerland
29–30 June 2023

Meeting Report



**World Health
Organization**

European Region





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Abstract:

To help facilitate progress towards the globally agreed target to cut salt intakes by 30% by 2025, the WHO Action Network on Salt Reduction in the Population in the European Region (ESAN) was established in 2007. The fifteenth ESAN meeting took place in Bern, Switzerland, on 29–30 June 2023. The meeting welcomed 37 participants, including representatives of 17 Member States, invited speakers and WHO staff. Representatives of 11 countries provided an update on national salt reduction activities and experts from the WHO Regional Office for Europe, WHO headquarters, and other partners presented new tools, initiatives and approaches relevant to salt reduction efforts. In addition, one session specifically focused on tackling iodine deficiency disorders in the WHO European Region and how to synergize efforts to improve iodine status with salt reduction initiatives.

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Abbreviations

AI	Artificial intelligence
EAR	Estimated average requirement
EFSA	European Food Safety Authority
EPIC	European Prospective Investigation of Cancer
ESAN	WHO Action Network on Salt Reduction in the Population in the European Region
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FLIP	Food labelling of Italian products study
FSVO	Federal Food Safety and Veterinary Office of Switzerland
GINA	Global database on the implementation of nutrition action
HES	Health examination survey
IDD	iodine deficiency disease
IGN	Iodine Global Network
INFID	Irish National Food Ingredient Database
IPH	Institute of Public Health of North Macedonia
NAFS	National Agency for Food Safety
NAPH	National Agency for Public Health
NCD	noncommunicable disease
OEC	Observatorio Epidemiologico Cardiovascolare
RDI	recommended daily intake
SDG	sustainable development goal
UIC	urinary iodine concentration
USI	universal salt iodization
WHO	World Health Organization

Background and introduction

The WHO Action Network on Salt Reduction in the Population in the European Region (hereafter referred to as ESAN or “the network”) was established in 2007 under the auspices of WHO and with the support of the United Kingdom Food Standards Agency. Since May 2013, Switzerland has chaired ESAN.

The network was established as a response to concern about the increasing salt consumption of the population, in line with the WHO Regional Office for Europe’s designation of salt reduction as a priority intervention for tackling noncommunicable diseases (NCDs) in the European population (1). The main aims and objectives of ESAN are to:

- establish, within the WHO European Region, a network of countries committed to reducing salt intake and building international action on salt reduction;
- provide opportunities for information exchange on the implementation of salt reduction strategies, as well as on related activities and achievements;
- provide opportunities for information exchange on technological progress and developmental processes related to salt reduction; and
- develop guidance for Member States wishing to develop salt reduction strategies and provide technical expertise on the different aspects of a salt reduction strategy, such as setting salt targets, monitoring levels of salt intake and salt in products, and communicating with the public.

Organization of the network

Since May 2013, the Federal Food Safety and Veterinary Office (FSVO) of Switzerland has chaired the network. As of June 2023, the network consists of 35 of the WHO European Region Member States. Participants include governmental institutions (or those nominated by government) and representatives of WHO and WHO collaborating centres. The network usually meets once a year, at a meeting organized by the ESAN leading country, in close collaboration with the Regional Office. (See Annex 1 for the programme and Annex 2 for list of participants). The network meeting is an important arena for sharing and discussing experiences in salt reduction strategies.

The fifteenth ESAN meeting took place in Bern, Switzerland on 29–30 June 2023. The meeting was co-organized by FSVO and the Regional Office. The meeting welcomed 37 participants, including representatives of 17 Member States, invited speakers and WHO staff (1).

Welcome and opening remarks

Michael Beer, Chair of the network, Switzerland, welcomed all participants to the meeting and thanked all for their engagement. As the first face-to-face meeting since the coronavirus disease (COVID-19) pandemic, the meeting was intended to present many opportunities for the exchange of experience, knowledge and best practices.

Kremlin Wickramasinghe, WHO European Office for the Prevention and Control of NCDs, welcomed participants on behalf of WHO. He thanked Switzerland for its continued leadership of the network and thanked Member States for their keen interest. As WHO is preparing for the United Nations High-level Meeting on NCDs in 2025, salt remains a key priority. The Regional Office is working on the "Race to the finish" to meet the Sustainable Development Goal (SDG) targets. This implies an acceleration on efforts to reduce salt and hypertension. A Signature Initiative of the Regional Director's Advisory Council on Innovation for NCDs has been established to link salt reduction and hypertension control as part of efforts to save thousands of lives from cardiovascular disease in the Region.

The Regional Office has written to the 53 Member States of the Region to ask for nominations for a focal point on nutrition, obesity and breastfeeding. As of June 2023, 22 Member States had responded. Member State participants were invited to follow up with international counterparts to encourage submission of nominations. This is an important move to ensure better communication and sharing of information, both internally and internationally.

Update on salt reduction activities in countries

Croatia

Bojan Jelakovic, Croatian Hypertension League, provided an overview of the 17-year "salt war" in Croatia. This started with a declaration on the importance of a national strategy on salt consumption by the Croatian Society for Hypertension in 2006 and the launch, in 2008, of Croatian Action on Salt and Health. Average daily salt intake in 2008 was 11.3 g/day (13.3 g/day for men and 10.2 g/day for women), well above the WHO recommended intakes. Between 2008 and 2012, activities included clinical studies on salt intake and blood pressure, determination of the salt content of bread – which was more than 2.2%, contributing 1.85 g of salt per day on average – and education and awareness activities, as well as negotiation with the food industry and government. In 2010, the first success was the reduction in sodium content of *Lipicki studenac*, a brand of mineral water.

In 2014, the Croatian Food Agency issued a scientific opinion on the effects of salt reduction in food, the Ministry of Health launched a Strategy for salt reduction in Croatia, and the first bakery decreased the salt content in bread from 2% to 1.8%. This was followed in 2015 by regulation of grain and breadstuff by the Ministry of Agriculture, setting a maximum salt level of 1.4%. In 2016, the biggest meat producer reduced salt content on all products by 25%.

Then, in 2019, the Ministry of Health stopped the salt reduction strategy. In 2020, the maximum level of salt in grain and breadstuffs was reduced to 1.3% and the Croatian Agency for Food and Agriculture conducted a new study and found that the contribution of salt in bread to population intakes had reduced to 1.59 g/day, and it published scientific opinions on salt intake from bread, bakery products and meat. Between 2018 and 2021, a new 24-hour urine study found that average population salt intake had reduced to 10 g/day (11.4 g/day for men and 9.2 g/day for women) (2).

In conclusion, therefore, a significant decrease (equal to 1.6 g/day) in salt intake has been achieved in the last 12 years. There is now also increased awareness of the harmful effects of salt. Collaboration with the food industry, including bakery and processed meat sectors, has produced results, and there have also been important regulatory documents. A decrease in average blood pressure in the general population (a drop of 3.4/1.9 mmHg) has also been observed between 2008 and 2019. Nonetheless, salt intake is still very high in Croatia and there is a need for a continuation and strengthening of efforts. The Croatian Hypertension League continues to advocate for a new national strategy.

In the discussion, it was clarified that consumers had reacted well to the 25% reduction in salt content in processed meat products and that, after three months, sales had increased. This action was the result of a long process of advocacy and negotiation between the Croatian Hypertension League and the industry.

Hungary

Eszter Sarkadi-Nagy, National Institute of Pharmacy and Nutrition, Hungary, provided an update on salt reduction activities in the last year.

The previous assessment of salt intakes was carried out in 2019, and the next one is planned for 2025. Due to discrepancies between the results of the 24-hour urine study and the National Diet and Nutrition Status Survey, there is a focus on updating the food composition database – over 500 products are planned for sampling and laboratory measurements.

Compliance with mandatory salt targets has become an important criterion in the evaluation of public catering tenders (3). This has become an important incentive for public catering providers, but providers have raised objections that the targets are difficult to meet because of salt levels in processed foods. For example, they argue that it is not possible to meet the standards if they provide a bread roll with a meal. Reformulation of processed food products remains, therefore, very important.

There have been important efforts on advocacy, education and strategic partnerships on salt reduction and food reformulation. The results of the Best-ReMap reformulation

work package 5¹ have been presented to major conferences. A public catering working group was established, in coordination with the National Institute of Pharmacy and Nutrition (NIPN), to exchange knowledge and experience on nutrition standards in public catering. A joint project proposal for food reformulation was prepared with partners, and Hungary will participate in the next Joint Action Prevent Non-Communicable Diseases (JA PreventNCD)² on reformulation-related work. In addition, the Co-Create approach³ was adapted to organize two dialogues on food reformulation with young professionals, food and nutrition experts, and representatives of the Association of Food Producers. This was found to be an effective method for dialogue.

As part of the Best-ReMap work package, there has been progress in reformulation monitoring. The project aimed to implement a sustainable European monitoring system for processed food reformulation. In 2020, data were collected manually by NIPN from online shops, and products were categorized and coded using the harmonized Best-ReMap food categorization. These data were used as the baseline. In 2022, data were collected with the Best-ReMap methodology, using photographs. Data were collected on bread products, breakfast cereals, delicatessen meats and fresh dairy products and desserts and soft drinks. Although these methods are not identical, it is possible to compare the two sets of data. No significant reductions were observed between 2020 and 2022 in bread categories, while in delicatessen meats there were reductions in some categories but increases in other categories. For dry sausages (where specific products were paired) salt levels were reduced in 40% of the cases, and this took place on a voluntary basis. These data from reformulation monitoring will be helpful in setting food reformulation targets and enabling objective monitoring of progress.

In the discussion, there was clarification that, contrary to expectations, data results on salt intake from the national dietary survey were higher than the 24-hour urine study results. This is why there are concerns that the food composition data are out of date.

In relation to the nutrition standards for public catering, there was clarification that there had been no opposition from the Ministry of Economy, but the public catering firms have shown resistance because of the difficulty in meeting the standards and the amount of administration involved.

Concerning the Best-ReMap food categorization, it is clear that the categories may need to be adapted for national markets. Hungary did this in cooperation with international partners and following the discussion with food technology experts.

¹ Best-ReMaP is a Europe-wide Joint Action that seeks to contribute to an improved quality of food supplied to citizens of Europe by facilitating the exchange and testing of good practices including food reformulation.

² JA PreventNCD aims to reduce Europe's cancer and NCD burden through coordinated strategies on health determinants, by focusing on effective policies and societal and personal risk factors. The Norwegian Directorate of Health is leading the coordination of the project. The project is co-funded by the European Union (EU) (4).

³ CO-CREATE is a large research project funded by the EU's Horizon 2020 research and innovation programme as part of the response to tackle the childhood obesity epidemic. The project ran from May 2018 to October 2023 (5).

The question of whether Hungary's Public Health Product Tax has had an impact on food reformulation was raised. It has had an impact, particularly on salt, but this has not been objectively measured to date. The reformulation monitoring system will be able to track such changes going forward.

Ireland

Sinead O'Mahony and Aideen McCann, Food Safety Authority of Ireland, jointly presented an overview of the salt reduction programme in Ireland.

Salt intakes in the Irish population remain high and are above the WHO recommendation of 5 g/day and the Irish population-level recommendation of 6 g/day. National data using spot urine, corrected for 24-hour urinary volume, showed intakes of 8.81 g/day for women and 11.57 g/day for men in 2010.

Salt-related measures in Ireland include: a nutrient profile for the restriction of broadcast media to children; nutritional standards for early year settings and school meals; consumer education (the START programme); and an ongoing voluntary salt reformulation programme since 2003. A *Roadmap for Food Product Reformulation in Ireland 2015–2025* has been published (6), and a national task force established. Priority categories for reformulation were reviewed and redefined (7). These categories contribute over 90% of sodium intake among children aged between 5 and 18 years and nearly 90% among adults.

A strong programme of monitoring is being established. Market snapshots of product categories have been conducted since 2016 – including some as part of Best-ReMap work package 5 in 2021 – and are ongoing. Sodium and potassium analyses will also continue, and existing data sources (Irish National Food Ingredient Database (INFID) Child and Teen databases) will be used. In addition, access to a commercial database is being explored.

In 2023, salt monitoring data for the period between 2003 and 2022 were published (8). These data show reductions in salt content over this 20-year period, however, stagnation or increases have been seen in more recent years. The 2022 bread results from the Sodium and Potassium Monitoring programme found that, between 2015 and 2018, the mean analysed salt levels had a statistically significant increase in unpackaged breads and wholegrain breads. The mean analysed salt levels had a statistically significant decrease in speciality products, wholemeal and white bread since 2003. No statistically significant change in mean analysed salt levels since 2011 was observed in mixed flour breads or since 2003 in brown flour breads. The analysed salt levels of the majority of bread products on the Irish market in 2022 are above WHO global sodium benchmarks. The analysed salt levels of the majority of snack foods on the Irish market from 2008 and 2021 are above WHO global sodium benchmarks, with 64% of private label savoury snacks and 74% of branded savoury snacks, sampled in 2008 and 2021, above the WHO benchmark levels. From work programme 5 of the Best ReMaP project, the wide range of salt contents in the delicatessen meat and bread product categories show that there is still lots of scope

for improvement. In breakfast cereals, a significant decrease between 2016 and 2021 was observed in two subcategories. A specific analysis of gluten-free foods found that gluten-free biscuits and cakes, pastries and buns have similar levels of salt to gluten-containing products.

In commercially available complementary foods, salt contents ranged from 0 g to 1 g per 100 g, and a significant decrease in salt level was observed in one subcategory between 2017 and 2021.

Future work will be to continue to monitor the salt content of the food supply, complete the second national adult nutrition survey and urinary excretion joint analysis, and conduct a pilot on sodium content of pizza eaten outside the home.

In the discussion, it was pointed out that it is important to look at the whole nutrient content of gluten-free foods, including fibre. It was also noted that a stakeholder meeting with the pizza industry had been organized in the Netherlands (Kingdom of the) in 2021 and a report is available.

Montenegro

Zorica Djordjevic, Institute of Public Health of Montenegro, provided an overview of actions to reduce salt intake.

An initiative to reduce excessive dietary salt intake in Montenegro was launched in 2012, leading to a Programme for Reducing Dietary Salt Intake in Montenegro 2017–2025, which is compatible with a strategy to reduce iodine deficiency disease (IDD). The aims of the programme are to: provide essential data necessary for a successful implementation of the Programme, which should be continuously updated and improved; upgrade awareness and knowledge of the population and professional public in Montenegro as to the importance of reducing excessive dietary intake; reduce salt content in processed foods, in cooperation with the food and catering industry; harmonize the national response to the problem of excessive dietary salt intake with successful international solutions and expertise; and establish a monitoring and evaluation system for the Programme's interventions.

In 2017, a 24-hour urinary study found that average population salt intake was 11.6 g/day (13.9 g/day for men and 9.9 g/day for women), and only 7% of the population had a salt intake below the WHO recommended intake of 5 g/day. A number of regionalization and integration workshops have addressed salt reduction issues.

Following a dialogue with key partners in the bakery sector, the standard for bread was revised to lower the maximum level of salt to 1.4 g. Implementation has been difficult and small producers are not compliant. The regular monitoring of salt content in bakery and meat products has now been established, along with the regular monitoring of salt content in food in kindergartens as part of the microbiological food safety self-control programme.

The Institute of Public Health (IPH) of Montenegro has supported the implementation of the Salt Reduction Programme, with a focus on setting and achieving new mandatory and voluntary goals for salt content in certain food products. Data from IPH in 2021 show the salt levels in different types of bread and bakery products, meat products and cheese. A small decrease in salt content in products was noted. Stakeholders in Montenegro find that the WHO global sodium benchmarks are too high currently and that a great deal of effort is needed to reach them. Challenges include different production conditions for big- and small-scale producers and the lack of resources, including financial ones. In 2022, a communication strategy and action plan were developed to raise awareness. The official state monitoring plan for food of animal origin has been improved by adding the obligatory testing of monitored food groups for salt content. In addition, the rulebook on the quality of bakery products has been amended to regulate salt content (9). Two guidelines are being or have been developed: Guidelines for reducing salt content in restaurant, catering and fast-food meals; and Guidelines for reducing salt content in meat products. The IPH is also continuously promoting healthy lifestyle messages, including on healthy diet and reducing salt consumption.

The history of efforts to improve iodine status in Montenegro was also summarized. Mandatory salt iodization has been carried out since 1953, leading to good results over time. In 2001, however, it was found that salt in households, production and trade activities was not iodized according to standards. A 2002 study concluded that the process of universal salt iodization (USI) was not satisfactory and that the household salt of schoolchildren is not adequately iodized. A later study, in 2007, found that all surveyed households were using iodized salt, and that salt was homogeneous, but iodization levels were lower than the recommended values. The low levels of iodization could be explained by the use of potassium iodide, which is unstable and easily lost, especially in large packs and inadequate storage.

With support from the United Nations Children's Fund (UNICEF), the IPH and the Ministry of Health, a roadmap with a plan of activities was developed for Montenegro in 2016. Mid-term, long-term actions and short-term actions were proposed. USI is now included in national strategic documents, such as the Montenegro Nutrition Action Plan and Programme for Reducing Dietary Salt Intake in Montenegro. The salt reduction programme in Montenegro is in line with the USI strategy and prepared with WHO support.

IPH and UNICEF conducted studies on iodine intake among pregnant women and breastfeeding mothers between 2017 and 2019. The study found that pregnant women are slightly iodine deficient (median urinary iodine excretion was 123.3 µg/l) and that salt from their households is homogeneously iodized, but below the set and recommended values. Breastfeeding mothers are not iodine deficient. Based on these studies and expert consultation, the regulations for salt iodization have been improved. The concentration of iodine in salt was corrected from 12–18 mg/kg of salt to 20–30 mg/kg of iodine in salt. The new rulebook entered into force on 21 February 2020.

The salt reduction and USI strategies are being implemented in parallel, and activities will be harmonized periodically. Going forward, there will be regular monitoring of the iodine content of salt and salt content of food; ongoing communication with food producers on reformulation; improvements to governance with the reestablishment of the Committee for the prevention of IDD and salt reduction; and the implementation of improved regular monitoring and data collection. The sustainability of these programmes needs to be achieved through the adequate planning of funds for research and a monitoring programme. Efforts will also continue to raise awareness, ensure constant communication, and support all stakeholders.

Netherlands (Kingdom of the)

Maria van Delft, Directorate Nutrition, Health Protection and Prevention, Ministry of Health Welfare and Sport, provided an overview on the implementation of food reformulation policy in the Netherlands (Kingdom of the).

Dutch reformulation policy is guided by a National Prevention Agreement, which included an agreement on "Making healthy choice the easy choice" in 2018. Since 2012, salt, saturated fats and sugars have been monitored. Between 2014 and 2020, agreements were reached with the private sector for certain categories.

In 2022, the National Approach for Product Improvement was launched to motivate producers to improve the composition of their products by reducing salt, sugars and saturated fats and increasing fibre for bread. There is an initial focus on products sold by supermarkets and wholesalers. Food products are divided into 40 main categories with 61 subcategories. Per product group, there are three limits for salt, sugar and/or saturated fat: low, medium and high. Bread also has low, medium and high levels of fibre. According to these limits in 2020, 25% were in the worst category and 25% were in the best category. The aim is to improve all products step by step. The goal is that, by 2030, 50% of the products in every product group are in the best category and no more than 10% will be in the worst category. Monitoring reports will be issued in 2025, 2028 and 2031.

In the first year of implementation, activities have included conducting an information campaign highlighting good practice, providing expert advice and response to questions to industry, carrying out an evaluation by Wageningen University, and preparing the first round of monitoring in 2025. The next steps include updating the criteria (to reflect Nutri-Score⁴ thresholds, where possible), setting limits for salt instead of sodium, making adjustments to have the same number of digits as in European guidelines, and updating the dataset. In addition, salt limits will be defined for meals. Furthermore, the Parliament is considering legal measures because there are concerns that the voluntary approach is not yielding sufficient progress. Finally, Foodvalley⁵ will be supported to do an analysis of the food system and create a food

⁴ Nutri-Score is a front-of-pack label which aims to support consumers to make healthier food choices by allowing a comparison of the nutritional quality across food products (23).

⁵ Foodvalley, based in the Netherlands (Kingdom of the), is an independent organization encouraging tasty, affordable, healthy and sustainable food, produced with respect for animals and our planet (24).

reformulation community across a wide range of stakeholders. This will be a five-year project, and the first results are expected in 2024.

The main lessons learned through experiences in this country are that:

- it is important to take time to explain the policy, especially for smaller companies;
- time is also needed to answer questions and adjust the policy when required;
- the transparency of data is very important for companies; and
- the inclusion of many product groups and several nutrients can be overwhelming for smaller companies.

The challenges encountered include unclear incentives for business to cooperate, the lack of a level playing field (e.g. if the out-of-home sector is not involved), the EU legal framework, portion size, and access to data (given that the process is very data-driven). Regarding data, the Netherlands (Kingdom of the) has a national branded food composition database that includes GS1 data and data from supermarkets, which covers 75% of the country's food supply.

In the discussion, there was clarification that the low, medium and high limits are based on the current 25th percentile, 50th percentile and 75th percentile. There was also clarification that levels would be adjusted to align with Nutri-Score if there was a considerable discrepancy (e.g. >3%).

North Macedonia

Igor Spiroski, Head of Department of Nutrition, Institute of Public Health of North Macedonia, provided an overview of the development of a salt reduction programme in North Macedonia.

In order to convince policy-makers of the need for an active salt reduction programme, available data on attributable mortality and salt as a risk factor and a conceptual framework for food systems and health were presented. Average daily salt intakes in 2020 were 12.9 g/day, among the highest in Europe, even though this figure is based on dietary survey data and may be an underestimate (10).

In order to create and implement a quality programme for reducing salt intake of the population, a time frame has been identified (2023–2027), a team has been established, national targets have been set, and goals and objectives defined. The selection of indicators will depend on the available budget.

The goal is to gradually reduce dietary salt intake of the population of North Macedonia by 4% per year (i.e. 20% by 2027) from the average of 11.5 g in the last five years to 9.2 g per day. Specific objectives are to:

- provide data for the successful implementation of evidence-based activities
- raise the awareness of the population about reduced dietary salt intake

- reformulate food in order to provide products with a reduced amount of salt
- strengthen the system for monitoring and evaluation of the salt intake
- establish an environment that will support reduced salt intake.

Several actions are proposed for each objective.

The risks that could impede achievement of the goal include no budgetary commitment to date and ongoing budget negotiations, resistance from food producers, the potential that reducing salt intakes will result in unwelcome reductions in dietary iodine intakes (sufficient iodine intake is essential), and any changes to the safety or sensory acceptability of foods. The programme was presented to stakeholders at an event in December 2022, co-hosted by the Ministry of Health, IPH and WHO.

As of June 2023, there has been a change of health minister, the fiscal implications need to be further explored, and no funds appear to be available for gathering data with the 24-hour urinary excretion methodology. A Special Public Health Adviser to the Minister has been appointed, who will see the initiative through the adoption process. It is envisaged that the plan will be adopted, and implementation will start from 2024. It is highly likely that there will be a further need for the sharing of experiences and lessons from countries that have implemented similar plans.

Republic of Moldova

Ion Salaru, National Agency for Public Health, presented a summary of salt reduction practices in the Republic of Moldova.

Under the *National NCD Prevention Programme 2023–2027 (11)*, priority actions include adoption of a new food salt regulation (entered into force on 1 June 2023), gradual reduction of salt content in main food products, and the establishment of a consultation platform with the private sector and economic operators to implement the salt reduction regulation.

According to the results of the Salt Consumption Survey (2016), average salt consumption in the Republic of Moldova was 10.8 g/day, more than double the 5g/day recommended by WHO. The main source is bread consumption, estimated to contain 1.88 g/100 g on average. According to the last two WHO STEPwise approach to NCD risk factor surveillance (STEPS) surveys⁶, prevalence of hypertension decreased from 42% in 2013 to 34% in 2021.

The expected contribution of the food industry is to adopt the measures proposed under the new regulation through product reformulation to align their products and services with public health guidelines and contribute to encouraging behaviour

⁶ STEPS is a simple, standardized method for collecting, analysing and disseminating data on key NCD risk factors in countries. The survey instrument covers key behavioural risk factors: tobacco use, alcohol use, physical inactivity, unhealthy diet; as well as key biological risk factors: overweight and obesity, raised blood pressure, raised blood glucose, and abnormal blood lipids (12).

change. Industry is also expected to innovate and develop market-based solutions for socially-responsible healthy products and services.

Regarding iodine, modern modelling techniques have been used to produce localized data on intakes. Modelling provided conclusive data on the largest contribution to iodine intake in the country, from breads produced with iodized salt along with iodized table salt. This led to the bakery industry uniformly accepting the need for mandatory use of iodized salt in baking, as part of the amended salt regulation adopted in December 2022.

The main provisions of the new sanitary regulation on food salt are:

- an increased recommended concentration of iodine in salt from 20–35 mg/kg to 25–40 mg/kg;
- permitting the re-packing of iodized food salt by importers;
- setting the recommended level of maximum 1 g salt/100 g in all bakery products from 1 June 2024;
- establishing responsibilities for monitoring surveillance for the National Agency for Public Health (NAPH) and National Agency for Food Safety (NAFS);
- a requirement for iodized salt to be more visible than non-iodized salt in supermarkets and a prohibition on selling non-iodized salt in the absence of iodized salt;
- making the use of iodized salt mandatory in all public, residential settings;
- the introduction of a new chapter on monitoring iodized salt consumption;
- established competences for the NAPH: surveillance of iodized consumption for different categories of customers, including public institutions; coordination of technical regulations for reformulated products; and control of iodine content in salt; and
- established competences for the NASF, such as the surveillance of salt trade on the market, control of food labelling, and control of salt content of foods.

Recent activities include the establishment of a working group to develop a joint NAPH and NAFS decree on food salt, organization of a workshop in May 2023 with the main stakeholders on implementation of the decree, a national communication campaign on reducing salt consumption, and continuous dialogue with the food industry. Forthcoming opportunities include a Swiss Development Corporation-funded healthy lifestyle project to implement a communication campaign, and the continued support of the Iodine Global Network (IGN). The next steps are to build capacity in the NAPH and NAFS, increase the availability and use of iodized salt in rural areas, and ensure implementation of the regulation on food salt in all public institutions.

There was clarification that multiple factors are thought to be involved in the drop in hypertension prevalence, including better disease control. In the first STEPS survey, it was found that three quarters of people with hypertension were not taking regular medication. The speaker shared that control is now better. Progress is also thought to be due to the previous communication campaign on salt consumption in 2019, the observed reduction in salt content of products, and the new law on consumer information, which includes mandatory salt content labelling and nutrient declarations.

There was clarification also that the maximum salt level for bakery products is mandatory. The level of 1 g/ 100 g is to be achieved by a stepwise approach – from June 2023 the maximum was 1.5 g/ 100 g and this will drop to 1 g in June 2024. This approach is intended to continue by targeting dairy products next.

Slovenia

Urška Blaznik, Environmental Health Centre, National Institute of Public Health Slovenia, provided an update on iodine and salt intake in the adult population in Slovenia.

In the first half of the 20th century, it was estimated that 58% of Slovenian school-aged children had goitre (13). Between the world wars, the incidence of goitre in the Slovenian population was as high as 80% (14). Following introduction of salt iodization in 1953 (10 mg/kg of potassium iodide) and its reinforcement in 1999 (level increase to 25 mg/kg), goitre prevalence dropped, reaching a level of 0.9% in adolescents by 2004 (15). Since 2004, entry into the EU single market has considerably affected the availability of non-iodized salt. In 2013, food safety authorities published a report showing that several non-iodized salts were available in the Slovenian food supply, implying a concern for adequate iodine intakes in the population.

In 2018, salt iodization was regulated independently from food quality regulation. All table salt is included and should be iodized, except Fleur de Sel (a rare type of salt), which has a protected geographical indication. In addition, storage instructions are required on the label, and non-iodized salt is required to carry the warning “Iodine is not added to the salt, necessary for the functioning of the thyroid gland”.

A study was conducted in 2022 to measure sodium, potassium and iodine excretion in a nationally representative sample of 518 Slovenian adults, using the 24-hour urinary excretion method, and results will be published in due course (16). The same study found population average salt intake (population weighted) to be 10.3 g/day (11.7 g/day in men and 8.72 g/day in women) (17). This is down from 12.4 g/day in 2007 and 11.8 g/day in 2012.

In response to a question about how investigators had ensured that the 24-hour urine samples were complete, there was clarification that the creatinine calculation recommended by WHO was performed. The sample was not adjusted for migrants or ethnic minorities, and the demographic data are available.

There was clarification that the next step in relation to salt reduction is to prepare a national food reformulation plan for all nutrients.

Spain

Maria Jose Yusta Boyo, Spanish Food Safety and Nutrition Agency, presented an overview of salt content reduction initiatives in Spain, with a focus on the country's reformulation plans.

The final results of the first reformulation plan, based on 21 sectoral agreements, have been published (18). The biggest percentage reductions in median salt content include 23.1% in potato crisps, 25.7% in fried snacks, 33% in some types of meat products (e.g. fresh sausages), 23% in croquettes, 21.8% in restructured squid rings, and 21.4% in some types of sauce (e.g. soft mayonnaise sauce). The results also show the percentage of products above the objective set for 2020. Figures include 25% in vegetable creams, 29.9% in salchichon vela extra (a type of salami), 43.3% in squid rings, 42% in small pies, 25.6% in nuggets, 44.7% in mayonnaise, and 30.8% in some sauces (e.g. soft mayonnaise sauce). The wide range of salt content, according to the label, in different categories of ready meals is presented in the final report.

The compliance of declared nutrient values with EU labelling rules was checked for a range of products, with 1163 analytical determinations for sugars, salt, saturated fat, or total fat. The study found that 3.7% of products exceeded the range established in the European Commission guidelines, indicating that compliance with the rules is high.

This private-public collaboration will now continue with a second reformulation plan. Support from international institutions is very important. Similarly, the evidence published in scientific journals is very important (19–22). Previous considerations that should be taken into account for the second plan include international organization recommendations, WHO global sodium benchmarks, the EU regulation on nutrition and health claims made on foods, quality standards, and other national legal provisions applicable to the different groups of foods and beverages.

New agreements will be established on the basis of criteria which:

- are feasible – as evidenced by the presence of products with nutrient content that is lower than the proposed objective, taking into account technological issues and consumer acceptance;
- are variable – with different content in products belonging to the same subcategory; and
- can have a possible impact – using different approaches (e.g. % reduction, maximum content) depending on the number of products that should reduce the nutrient quantity.

The lessons learned and key aspects include:

- keep sectoral agreements with the manufacturing, retail, and out-of-home sectors;
- use a nutrient approach (with a focus on nutrients): salt, sugars and saturated fats;
- keep objectives relevant, achievable, explicit, measurable and focused;

- consider the objectives achieved in the first plan to establish new proposals (i.e. focus on products with higher nutrient content, and food subcategories with lower reductions and high dispersion);
- use two types of objectives: maximum nutrient content and median nutrient content;
- keep a three-year deadline;
- keep monitoring commissions; and
- monitor progress using labelling data (subject to the normal checks and controls by food authorities).

During the discussion, there was clarification that the maximum level of 1.6 g in bread is mandatory and is subject to official control.

Sweden

Åsa Konde, Swedish Food Agency, provided an overview of planning for monitoring the effects of voluntary agreements on salt reduction.

There are many different methods for monitoring salt content and intake, including:

- dietary surveys – in place in Sweden, but are dependent on the accuracy of reporting and food composition databases;
- per capita-based analysis of nutrients and toxic compounds in market baskets – conducted every ten years;
- spot urine analysis studies – conducted in Sweden;
- 24-hour urinary excretion studies – not yet carried out in Sweden;
- salt content of certain food items – the intention is to develop this work to conduct annual assessments on a list of foods; and
- salt content in meals from fast-food restaurants – this type of study has been carried out once.

Sweden is planning to monitor the voluntary agreements by using GS1 data and inform the food industry and retailers of the results, in order to highlight examples of both best and worst practice.

Sweden is very keen to hear about other Member States' experiences with monitoring. In particular, it would be useful to learn from others' experiences with 24-hour urine studies and the associated costs.

In the discussion, it was noted that the costly element of 24-hour urine studies is attaining a sample, and this can be subcontracted to a company.

Regarding engagement with industry, Ireland has had experience of organizing six-monthly engagement meetings with industry and meeting recordings are on the government website.

Switzerland

Steffi Schluechter, Federal Food Safety and Veterinary Office, presented the country update for Switzerland.

As of 2023, Switzerland had not reached an agreement with the food industry on salt reduction in foods, despite having reached a similar agreement on sugar. A paper exploring the legal measures implemented by other countries was, therefore, prepared. The process can be thought of as a written “think tank”. Thanks are due to all Member States that provided information. Most introduced legal measures related to bread, setting limits on maximum levels of salt in bread. Some Member States have set legally binding levels in quality standards or regulations.

The biomonitoring of salt intakes is ongoing, with a 24-hour urinary excretion study currently being finalized to follow up on the 2010–2011 study. After some difficulty in signing up participants, 840 participants were involved in the study. The results should be published in 2024 and will be shared with ESAN members.

Future plans include a project on sodium, iodine and potassium in breakfast cereals and meat substitutes, as part of the updating of the food composition database.

During the discussion, the question of possible next steps relating to the introduction of legal measures was raised. Clarification was given that the report will be published soon, and next steps will then be considered.

The reasons for why Switzerland had reached an agreement with industry on sugar but not on salt were explored. One possible contributory factor is the lack of media and consumer pressure relating to salt reduction compared to sugar reduction. Another reason could be the restriction on the use of potassium chloride to reduce salt, analogous to the restriction on replacing reduced sugar with non-nutritive sweeteners.

Global sodium benchmarks

Rain Yamamoto, Unit of Standards and Scientific Advice, Department of Nutrition and Food Safety, WHO headquarters, provided an overview of the global sodium benchmarks, which were published in May 2021 (25).

The *WHO global sodium benchmarks for different food categories* set maximum levels that processed food can contain, with the aim of setting a harmonized global goal. These figures serve as a guide for countries and as a basis for dialogue with industries. Benchmarks have been established for 58 food categories and are pending for six categories.

The benchmarks are based on technical and scientific work and the experiences of countries. Data on existing sodium targets were collected and compiled from 41 countries, one WHO region, and a WHO subregion, which had developed national or regional targets. In principle, the lowest value for each subcategory from existing national or regional targets was chosen as a benchmark value. Each value was then reviewed for suitability. The targets are challenging and ambitious and can be seen as long-term goals.

WHO expects countries to adopt the global sodium benchmarks to reduce their populations' sodium intake. Industry is expected to implement the global sodium benchmarks to cut sodium levels in processed foods. Civil society and consumers can use the benchmarks to advocate and demand for lower sodium in processed foods.

The benchmarks should be considered as a living document, which will be regularly improved. The second edition will seek to set benchmarks for the six pending subcategories for which benchmarks were not set in the absence of appropriate existing national targets. In addition, they will incorporate national sodium targets set by several additional countries that were newly identified to have set targets, as well as one country that has recently updated its targets.

It is important to note that the feasibility of the targets has been demonstrated. All of them have been set by Member States, who had discussed the feasibility with industry. In principle, it is a good idea to push companies to go as far as possible. To support this process, a manual to help countries set national targets is under development.

The *WHO sodium country score card* has been developed to enable dynamic tracking of country policy progress towards sodium reduction (26). The scoring system is based on policies, actions and mechanisms in the Global database on the Implementation of Nutrition Action (GINA). Four scores are calculated: 1) national policy commitment to reduce sodium intake; 2) voluntary measures to reduce sodium; 3) mandatory measures adopted for sodium reduction; and 4) multiple mandatory measures adopted for sodium reduction and implementation of all related *WHO Best Buys for tackling NCDs* (27).

WHO is also developing a guideline on the use of low-sodium salt substitutes. Low sodium-salt substitutes emerged as a potential strategy to reduce a population's

sodium intake. Concerns exist, however, about potential adverse effects, such as hyperkalaemia. Hence, there was a need to develop WHO guidance. A draft guideline was issued for public consultation in March 2023⁷ (28).

In Switzerland, it was pointed out in the discussion, companies were asked to reduce salt without using low-sodium salt substitutes. Some countries are promoting the use of potassium salt, but there are concerns that this does not encourage preferences for less salty tasting food.

Country example from Italy: Survey on sodium content of selected food groups compared with WHO benchmarks

Veronica Abate, Federico II University in Naples, presented the results of the Food Labelling of Italian Products (FLIP) study on sodium content in cereal-based products sold in Italy and a comparison with global benchmarks.

The aims of the study were to: compare the sodium content of cereal-based products sold in Italy with WHO benchmarks, knowing that cereals are the major contributor to daily sodium intake (25–40%); establish the gap between the products sold in Italy with the WHO benchmarks; and assess the main subcategories and types that need reformulation in the next years. Data in the FLIP database include a company name, brand name, descriptive name, salt content in g/100 g, information on the presence or absence of nutritional claims, health claims, gluten-free or organic declarations, and whether a product is branded or private label.

The study investigated over 3000 products, and results show the differences between the sodium content in the categories and the benchmarks. For crackers/savoury biscuits, the levels in many subcategories are much higher than the benchmark value (with values in some products almost double the benchmark value). For minimally-processed breakfast cereals, the levels are actually much lower than the benchmark levels, although it was noted that such products are not commonly consumed in Italy. The study did not cover meats, cheese, canned products and products found in discount stores and/or vending machines.

In conclusion, both reformulation and education are needed to reduce salt intakes.

⁷ The draft guideline is still under review.

WHO reformulation manual

Martijn Noort, Wageningen Food and Biobased Research, Netherlands (Kingdom of the), presented the development of a WHO reformulation manual.

Salt has multiple functionalities in foods, and these vary between food groups and/or products. The functionalities can relate to processing and product quality, shelf life and safety, and taste perception. Therefore, processing products with reduced salt needs adjustments, but it is possible to produce high-quality products. Studies have shown that substantial reductions of around 25% can be accepted by consumers, with relatively fast adaptation. Industry-wide gradual reduction of sodium content is required to adjust consumer preference to lower sodium levels.

It is important to understand the underlying mechanisms of salt functionality. The effect of sodium on water activity is one important example, because many aspects – including texture, microbial growth, fermentation, enzyme reactions, lipid oxidation and browning – depend on water activity. It is important, therefore, to understand the effect of water activity when reducing salt.

To help address the challenges of reformulation, the WHO Regional Office for Europe is developing a reformulation manual. Stakeholder workshops have been held, which revealed that both governments and industry – particularly small and medium companies – need practical support. The manual will also collect information on health effects, best practices for policy-makers, technical information and practical advice. The manual is envisaged as an interactive tool rather than as a report. One challenge in producing the manual is the decision about how much detailed specific technical content to include. Another challenge is whether to extend the manual to cover sugar and trans fatty acids.

The development of the manual is underway, including writing the content, developing the interactive tool, and hosting and maintaining the tool. It is hoped that the content relating to sodium will be finalized in 2024. The extension to sugar reduction is starting.

It is hoped that this technical background will be useful for policy-makers in dialogue with the industry. This will also help to counter common industry arguments that mandatory maximum levels would be difficult for small and medium enterprises.

In the discussion, it was noted that Sweden has capitalized on experience with salt reduction techniques through collaborating with researchers and industry in publishing papers and preparing a small number of videos for food producers (in Swedish).

The possibility of translating the reformulation manual into other languages was discussed. Ministries of health are free to translate the manual without restriction.

Addressing salt intake through front-of-pack nutrition labelling

Mike Rayner, University of Oxford, presented an overview of how front-of-pack nutrition labelling can help in reducing salt intakes.

There are two types of front-of-pack nutrition labelling schemes:

- nutrient-specific systems, such as multiple traffic lights
- summary indicator systems, such as Nutri-Score or Health Star Rating.

In addition, there are schemes which are specific to health or nutrition claims, which are sometimes referred to as endorsement logos. This type of scheme includes summary indicators, such as the Nordic Keyhole scheme. In addition, there are schemes specific to health or nutrition warnings, which tend to be nutrient-specific (e.g. Chilean health warning labels). Labels can be either interpretive or non-interpretive.

There are currently four main front-of-pack labels used in Europe:

- multiple traffic light labelling (e.g. United Kingdom)
- Nordic Keyhole label
- Nutri-Score
- warning labels (e.g. Israel).

The use of front-of-pack nutrition labels in Europe increased significantly between 2017 and 2023, particularly after the rapid adoption of the Nutri-Score front-of-pack label, which was first developed and adopted in France, in several countries. The most appropriate scheme for a country depends very much on the national context and the history of front-of-pack nutrition labelling in the country.

There are different pathways for the impact of food labelling on health, through impacts on consumers and/or on producers. Of these, it is possible that the change in producer behaviour – as they reformulate products to improve their labels – has the biggest impact.

Research on front-of-pack labelling needs to consider two separate aspects: the nutrient profile model and graphic design. Consideration of the most effective front-of-pack nutrition labelling scheme depends on whether this relates to the: nutrient profile model or the design; impact on consumer behaviour or industry response; and impact on cognitive functions or actual behaviour. It also depends on whether the aim of the scheme is to be informative or persuasive.

It can be concluded that front-of-pack nutrition labelling does, in general, have an impact on consumer behaviour. Summary schemes appear to be more persuasive and more informative. Warning label schemes appear to be persuasive but are less

informative. The most appropriate scheme for a particular situation, therefore, depends on the specific context and aims of the scheme to be introduced.

The WHO Regional Office for Europe is not in a position to recommend a single method for front-of-pack nutrition labelling for every country in Europe. WHO therefore proposes to develop template nutrition profile models for the four types of front-of-pack nutrition labelling currently in use in the WHO European Region. These will be accompanied by advice on how to adapt these template models, depending on the national circumstances. The process of developing these template nutrient profile models will be similar to those used to develop WHO nutrient profile models for marketing restrictions.

In the discussion there was clarification that, although the Swedish National Food Agency supports the Nordic Keyhole scheme, it is not resistant to other labelling schemes. The Keyhole works very well in the Nordic context but might not work so well in other country contexts. There are some valuable insights from implementation of the Keyhole, however, that it could be useful to feed into Nutri-Score review/development. From a Swedish perspective, for example, it would be preferable if Nutri-Score could take wholegrains into account.

A question was raised about the suggestion that Nutri-Score could be considered more informative than traffic lights. There was clarification that this is because the traffic lights system puts a considerable cognitive load on the consumer, who still has to make judgements about different nutrients.

There was clarification that, within the ongoing development process for the nutrient profile models, a decision will be needed on exactly how detailed the templates need to be.

It was noted that there is an ongoing debate within the EU about which front-of-pack nutrition labelling scheme to adopt on an EU-wide basis. By developing the template nutrient profile models and putting these on an online platform, WHO will be supporting countries to test different approaches, and this can feed into Member State contributions to the EU negotiations.

Estimating the potential impact of United Kingdom salt reduction targets on cardiovascular health outcomes in adults: a modelling study

Lauren Bandy, University of Oxford, presented an overview of a study to evaluate the impact on the population's salt intake, cardiovascular outcomes, and health-care costs, if the food industry were to meet fully the current United Kingdom salt reduction targets.

The study methodology included estimating the changes in salt intake if the targets were met using national dietary survey data and modelling what impact this reduction would have on health outcomes and health-care costs using the PRIMETIME model.

Preliminary results point to considerable health and economic benefits of meeting the targets and the results of the study will be published in due course.

Iodine and salt

Iodine is an essential nutrient that is essential for thyroid function and thyroid hormone synthesis. IDD include a wide range of conditions, including goitre, hypothyroidism and neurocognitive impairment.

Recently some ministers of health of the WHO European Region have been surprised to find out about the presence of IDD in their countries and there is now a renewed will to tackle iodine deficiency in the Region. It is important that this is addressed in parallel with salt reduction, as concerns about iodine deficiency have been previously a barrier to salt reduction efforts in some countries.

Iodine intake in Europe: Synergies between salt iodization and sodium reduction strategies

Maria Andersson, Nutrition Research Unit, University Children's Hospital Zürich, presented an overview of iodine status and salt iodization and explored the synergies with salt reduction.

Europe has a long history of IDD. In some remote valleys, historically, the prevalence of iodine deficiency was as high as 90% and one in ten children were born with cretinism. There is also a long history of action to improve iodine status, including salt iodization – in 2022, Switzerland marked 100 years of salt iodization. This has been extremely successful, with the incidence of goitre dropping dramatically within 5 to 10 years of implementation.

Iodine is an essential nutrient, and the dietary iodine requirement is 150 µg per day. More than 90% of dietary iodine is excreted in urine if the individual is in iodine balance. Iodine deficiency occurs when diet alone does not meet the need of 150 µg per day. Although the severe iodine deficiency that Europe experienced in the past is no longer observed, with very few exceptions, mild deficiency does occur. Universal salt iodization is the strategy for addressing this. If salt is iodized, then it is possible to have adequate iodine status in all population groups. There has been some discussion about whether pregnant women require supplements – and in some Member States, supplements are recommended – but where salt iodization is mandatory, there is evidence that supplements are not needed for any group.

Universal salt iodization means that all salt consumed is iodized. Legislation for salt iodization is in place in 147 countries, and mandatory in 126, and it is estimated that

89% of the global population consumes iodized salt. The number of countries worldwide with optimal iodine intake has increased from 8 in 1993 to 111 in 2022. This can be considered as a major global public health success. The levels of iodine specified for salt iodization in the WHO European Region are adequate except for Iceland (which has high fish consumption), Norway (which specifies 5 parts per million), and the United Kingdom, which does not have any related legislation.

Salt iodization and iodine status in Switzerland

In Switzerland, the level of salt iodization was increased to 25 mg/kg in 2014. There is one main producer of salt in the country, which facilitates the process. National iodine status monitoring among children aged 6–12 years has been conducted using spot urine samples every five years since 1999, by academic institutions with the support of the Federal Office for Food Safety. Median urinary iodine concentration (UIC) in children has been found to be adequate (29). The Swiss salt study 2010–2012 found inadequate iodine status in 14% of women and 2% of men (30, 31). A study among students in Zurich found a very low UIC, but this was based on a sample that was drinking a lot of water and had a high volume of urine, which means that the iodine intake may be underestimated. In pregnant women, data show borderline UIC (as has been observed in other Member States in the Region) (32, 33). Again, the high urine volume may be a contributor. In conclusion, there is adequate iodine status in Swiss school children but borderline low iodine intake in women of reproductive age, pregnant women and infants. A cohort study among children aged 6–12 years in Germany found evidence of declining iodine intakes after a plateau between 2003 and 2013 (34).

The reasons for this need to be explored. In Switzerland, 60% of total salt sales are for iodized salt and 40% are for non-iodized salt. According to the Swiss National Iodine Study 2020–2021, over 80% of respondents use iodized salt at home, and 87% of bakeries use iodized salt. A new market survey from the Federal Office for Food Safety found that only 34.3% of processed foods are produced using iodized salt. The figure is 46.7% for processed foods produced in Switzerland and 9.1% for imported foods. Use is lower in organic products (15.3%) than non-organic ones (37.5%). Studies measuring urinary iodine and sodium, by 24-hour urinary excretion, demonstrate that the proportion of iodized salt is too low (28% and 43% of intake in Germany and Switzerland, respectively (35, 36). Dietary sources other than salt – such as milk, dairy products, eggs and fish – contribute to the iodine intake of the Swiss population. Discussion with food manufacturers revealed several reasons for why they do not use iodized salt; these include concerns about labelling complications for export, that iodized salt is not always perceived as a healthy choice, and the lack of consumer demand for iodized salt.

Current iodine status in Europe

In the Region, there is a mix of mandatory and voluntary legislation for salt iodization. Unpublished data on median UIC from nationally representative surveys suggest that iodine intakes in children are adequate in 31 countries and insufficient in five countries. For adults, intakes are adequate in 14 countries and inadequate in nine countries. For

pregnant women, intakes are adequate in 10 countries and inadequate in 20 countries. There are many gaps in the data – 18 countries have no data on children, 31 have none for adults, and 24 have none for pregnant women. Ten countries have no data at all. There is a need to improve the availability of data to better understand the situation. Countries are urged, therefore, to include iodine in any sodium studies and other national nutrition studies. It may also be interesting to explore other types of surveillance, such as sentinel monitoring.

WHO, UNICEF and the International Council for the Control of Iodine Deficiency Disorders Global Network produced a 2007 guide on the assessment of iodine deficiency disorders and monitoring of their elimination. This is in the process of being updated. Dietary requirements for iodine are poorly defined and this will change in the future. The thresholds for iodine deficiency are uncertain.

It is possible to attain more from urinary iodine studies than simply median UIC – namely, it is possible to use UIC to estimate iodine intake and the prevalence of iodine inadequacy (37, 38). The Estimated Average Requirement (EAR) cut-point method from spot urine can be a more reliable estimate of the mean/median habitual iodine intake than median UIC, and this can be performed with a lower sample size. However, a repeat spot urine sample is needed, which can slightly increase the costs (although the sample size is lower). So, while median UIC remains the main survey outcome, the EAR cut-point method may be useful in populations with low or borderline low iodine intake, large intra-individual differences in intakes, and/or high or low urine volume.

It is important to consider whether there should be concern about mild deficiency. Today, there is no evidence that levels of mild deficiency cause changes in the thyroid-stimulating hormone and thyroxine⁸ that are so severe as to have mental health implications. Danish scientists, however, found increased thyroid activity and an increased risk of thyroid nodules. Further research is needed on the effects of mild deficiency and thyroid function (39).

In conclusion, mandatory salt iodization helps meet the dietary iodine requirements of all population groups. Iodine intake is decreasing in several European countries. There is a risk of an increased prevalence of thyroid disorders, but the data are limited. Concern is focused on subgroups at the lower end of the intake distribution. Improvements in the use of iodized salt in food production are needed, along with greater consumer demand resulting from the dissemination of information about the importance of iodized salt to both food producers and consumers. In addition, monitoring sodium and iodine intake in the same studies is recommended, as is adapting the level of salt iodine fortification in response to reduced salt intake.

The WHO Regional Office for Europe and IGN will be publishing a report on iodine deficiency in the Region in order to provide guidance on strategies to improve iodine intake among the European population. The goal is to maintain adequate iodine intake for the next 100 years. The hope is to publish the report before the end of 2023.

⁸ Both hormones are necessary for growth and development and require an adequate iodine intake.

It was discussed that this is now an important priority for WHO and it is hoped that publication of the report will stimulate efforts on salt iodization and more studies. At a WHO technical meeting in 2013, it was clearly stated that it is vital to ensure that salt reduction and iodine strategies are synergized. For this to happen, iodine status needs to be measured, and this is not always being done currently.

The question of whether differences in iodine status can be seen between countries, where salt iodization is either mandatory or voluntary, was raised. There are clear differences. In Croatia, for example, where salt iodization is mandatory, there is adequate iodine status in all population groups. In Switzerland, in comparison, where iodization will never be mandatory, there is a need for other complementary measures. Coverage of iodized salt is better when it is mandatory, and it is the coverage of iodized salt which needs to increase to improve population iodine status.

There was some discussion about the trade implications for countries with mandatory iodization of opening their markets to products from countries with voluntary iodization. There has been some discussion at the EU level, but the political climate does not currently favour mandatory iodization.

Member State representatives were invited to contact WHO and/or Maria Andersson to provide information on country examples and case studies.

With changing dietary patterns, for example, as people start to eat less bread or switch to plant-based diets, there are concerns about the impact on iodine status. In the Netherlands (Kingdom of the), it is possible to label iodized salt as “bread salt”, which can be helpful. Education is needed and the industry needs to change its practices. In Sweden, it was noted that iodized salt is almost never used in processed foods; one of the reasons is the requirement to label salt as potassium iodate. This may be an issue for which WHO needs to reach out to Codex⁹, since this is clearly an important issue to address.

Country example: Iodine in Swiss milk and cheese

Kathryn Burton-Pimentel, Agroscope, Human Nutrition, Sensory Analysis and Flavour Group, presented the results of two studies on iodine in Swiss milk and cheese.

Conventional dairy products contribute about 24% of the recommended daily intake (RDI) of iodine, while organic dairy products contribute about 15% of the RDI.

A study into the iodine content of milk in 2013–2014 investigated factors that influence milk iodine content, such as seasonal fluctuations, production systems, feeding influences and processing method. Representative mixed milk samples, with a focus on ultra-high temperature milk, were analysed from two industrial producers over a

⁹ The Codex Alimentarius international food standards, guidelines and codes of practice contribute to the safety, quality and fairness of this international food trade. Consumers can trust the safety and quality of the food products they buy, and importers can trust that the food they ordered will be in accordance with their specifications (40).

period of 12 months. The study found that Swiss milk contains about twice as much iodine as it did 25 years ago. This is probably due to changes in animal feeding (and use of supplements). Organic milk contains, on average, 35% less iodine because of system-related factors, such as the ban on iodized lick stones. Factors influencing milk iodine content include the feed (e.g. licks, supplements), contamination (e.g. teat dipping with iodophores, use of iodine-containing disinfectants), seasonality (i.e. differences in summer or winter feeding) and regional differences between the east and west of the country. An increase of iodine content in milk is possible, therefore, through changes to animal feeding.

The contribution of cheese to iodine intake is low, as most of the iodine in the milk is removed with the whey during cheese-making. Another study explored the variation in iodine in different parts of cheese (i.e. milk, whey, brine, cheese). Cheese sampling is complicated because different levels of iodine can be found in different parts of the cheese. In Tilsiter cheese, levels of iodine are clearly higher in cheese where iodized salt is used, and the highest level of iodine is found in the rind but also in the border and core zones of the cheese.

The contribution of conventional dairy products to iodine intake in Switzerland could be greatly increased if iodized salt were used for the salt bath, which could increase it to 36% of RDI. However, most Swiss cheese producers no longer use iodized salt for a number of reasons. One reason is that there are large exports to France, where, until recently, legislation did not permit the use of iodized ingredients. Another reason is that new Swiss labelling rules require a list of ingredients to be declared for cheese containing iodized salt, while no list of ingredients is required for cheese containing non-iodized salt.

During the discussion, it was noted that a drop in iodine status in the United Kingdom had been thought to be attributable to changes in farming practices, such as changes to the way in which milk containers were washed. In Sweden, there was also investigation of why iodine levels had decreased, and one reason was thought to be a change in the disinfectant used and an EU regulation limiting the permitted iodine content of animal feed. There was some discussion of the rationale for that regulation. Previously, permitted levels in feed were very high, to stimulate milk production, but these had been revised down to reflect the needs of cows. It was suggested that the regulatory levels are appropriate, but there is a very broad range and huge variability in practices, and some feed producers decide to add lower levels.

The question was raised as to whether chloride, from sodium chloride, drives the movement of iodine in cheese, but the evidence is not clear on this.

There was discussion of iodine in plant-based milk alternatives. These drinks tend to be much lower in multiple nutrients. On the Swiss market, none of these products were found to be iodine-fortified. It was pointed out that WHO is currently working on issues relating to the transition to healthy and sustainable diets, and the nutritional impact of emerging foods related to that transition.

Country example: Relationship between sodium and iodine intake in the Italian population

Veronica Abate, Federico II University, Naples, presented the results of a study on iodine intake from food and iodized salt, as related to dietary salt consumption among Italian adults.

In Italy, legislation on mandatory salt iodization (30 mg/kg) was introduced in 2005, mandating the availability of iodized salt in shops and public catering. The latest data, based on data between 2008 and 2012, found that the median UIC of the population was 46 µg/L, which is below the WHO standard for adequate iodine status (41). The estimated median daily iodine intake is also below the Food and Agriculture Organization of the United Nations (FAO)/WHO and European Food Safety Authority (EFSA) daily adequate iodine intake levels. On the other hand, despite recent reductions, salt intake remains too high, with the population average daily intake of 9.5 g for men and 7.2 g for women in 2018–2019 (42).

The study aimed to analyse the salt consumption and iodine intake in a sample of the Italian population (n=2219) and to estimate the contribution of iodized salt and food to the total iodine intake. The sample was randomly selected from the participants in the *Observatorio Epidemiologico Cardiovascolare/Health Examination Survey (OEC/HES) 2008–2012* (43). Salt consumption and iodine intake were estimated through 24-hour urine analysis, and dietary iodine and iodized salt consumption were estimated using the European Prospective Investigation of Cancer (EPIC) food frequency questionnaire.

The results confirmed that iodine intake was too low (95 µg/day) and salt intake was too high (10.2 g/day). Dividing the population into quintiles by salt intake, it can be seen that, as salt intake increased, iodine intake also increased. Iodized salt was used only by 24% of the study population, and dairy and fish were the main sources from food. It should be noted that the population was recruited over ten years ago, before the full implementation of the Italian iodine legislation.

In conclusion, a significant relationship occurred between sodium and iodine intake, and an inadequate iodine intake depended on the negligible amount of iodine provided by commercially available salt-rich processed foods, insufficient use of iodized salt at home, and less-than-optimal consumption of iodine-rich foods.

Marketing of unhealthy foods to children

Kathrin Hetz, Special Initiative on NCDs and Innovation, WHO Regional Office for Europe, presented an overview of the Regional Office's work on the marketing of unhealthy foods to children.

This is important because many studies have shown the negative impact of marketing on children, and children's exposure to marketing needs to be reduced in order to give the coming generations a better chance of developing healthy dietary patterns.

The activities on digital food marketing are under the umbrella of WHO's mission of "making Europe the safest place for children to go online". Implementation involves mapping, monitoring and regulating digital marketing.

WHO has developed a number of tools to support the monitoring of marketing on television (44) and digital (45) channels. Television remains an important source of food and beverage advertising, and studies to monitor television marketing have been conducted in Armenia, Azerbaijan, Belarus, Estonia, Kazakhstan, Kyrgyzstan, Portugal, Russian Federation, Tajikistan and Uzbekistan.

The CLICK monitoring framework has been developed by the WHO Regional Office for Europe to monitor digital marketing. This includes protocols and the development of the smartphone application KidAd and an artificial intelligence tool to process the data collected. A number of countries have already used the CLICK protocol to either investigate exposure through paid advertising and/or to capture all types of marketing on screen. A protocol for monitoring outdoor advertising is under development, as part of the collaboration with Best-ReMap. Using the CLICK methodology, both Norway and Portugal found that the most commonly seen advertisements included foods likely to have high salt content, including ready-made and convenience foods, pizza, processed meats and fish. Findings in Switzerland found that advertising tended to focus on sweet, rather than savoury, foods.

An important tool to enable action on food marketing is the regional nutrient profile model. The first model was developed in 2015, and this has since been updated with the second edition published in 2023 (46). The updated model has 22 categories (17 for foods and 5 for beverages).

The KidAd app has been developed as part of a set of monitoring tools to capture real-life marketing exposure rather than a short laboratory experience. The mobile app can be installed on children's Android smartphones and can take screenshots when pre-defined apps are used. Collected screenshots and metadata are securely transferred and stored in the cloud. A responsible team manually analyses images to detect the advertising of unhealthy foods in screenshots. An artificial intelligence (AI) tool has also been developed to go through the screenshots and filter out those that are not advertisements. Challenges associated with the development and implementation of this tool include insufficient "training data" to train and validate the AI algorithm, the need to find the appropriate frequency for screenshots (more screenshots provide more data points for the AI algorithm but also increase processing and data costs), and the ethical challenges of collecting pictures from children's devices in terms of safety and privacy. Participants were encouraged to download the app and share any screenshots of unhealthy food marketing, in order to help train the AI tool on brands, language and products.

The data collected through monitoring will help inform the regulatory process. WHO is now developing a legal network – inviting lawyers from different regions – to develop model laws and discuss potential barriers and how to overcome such barriers.

The intention is to develop model laws for EU and Eurasian Member States and for those without any economic union.

Further WHO guidance documents, both global and for the WHO European Region, will be published in summer 2023 (47, 48).

During the discussion, the issue of prohibiting the use of images of children in marketing materials for food products was raised, and whether any guidance on this issue is available. There was clarification that, if children are used in marketing materials, then these materials can be considered as child-directed. There are also, however, many advertisements that do not feature children but are still aimed at children or young people. This is why WHO recommends restricting children's exposure to any advertising for unhealthy foods.

Public food procurement and school nutrition policies

Clare Farrand, Special Initiative on NCDs and Innovation, WHO Regional Office for Europe, provided an overview of WHO activities on public food procurement and school nutrition policies in the WHO European Region.

Human health and environmental health can no longer be kept separate, and Member States have been requesting guidance on healthy and sustainable diets. The Regional Office organized an expert meeting on healthy and sustainable diets in March 2021 and published a meeting report (49).

One important mechanism to promote healthy and sustainable diets is through public food procurement. One of WHO's seven workstreams to promote healthy and sustainable diets, therefore, is the development of a public food procurement manual. The benefits of healthy public food procurement and service policies include public health benefits, economic gains, increased productivity and educational attainment, and boosting the availability of healthy, affordable, culturally acceptable food that is sustainably produced through local agriculture. In addition, there are potential benefits for equity, and public procurement has the potential to reach large population groups. The food procurement manual is intended to build on the *WHO Action framework for public food procurement and service policies for a healthy diet*, which was developed as a tool to support the development and implementation of healthy public food procurement (50). The document provides guidance on how to use nutrition criteria, including nutrient-based criteria, food-based criteria and other nutrition-related criteria (e.g. in relation to cooking methods or portion size).

The food procurement manual, entitled *How together we can make the world's most healthy and sustainable public food procurement*, has been developed to help food procurement officers in public institutions that are charged with procuring food within the organization (51). It will support procurement officers in setting up contracts with suppliers and deciding on the criteria for contracts. Health criteria could include, for example, limiting sodium consumption and ensuring that salt is iodized.

In the WHO European Region, it is often cities that are leading the way on public food procurement. In the Danish city of Copenhagen, for example, almost 90% of the food served today in public institutions is organic, triggering a focused effort to increase the proportion of plant-based food.¹⁰ In 2019, a new food strategy for the city was launched, which set new targets for how the city will work to ensure healthy, organic and sustainable meals in its more than 70 000 daily servings. The strategy sets a target to reduce CO₂ emissions from public meals by 25% by 2025.

School-based interventions to promote healthy diets and physical activity are promising because they can help ensure that children from all socioeconomic backgrounds have access to healthy foods and environments that encourage physical activity. Governments bear ultimate responsibility for ensuring that their children have a healthy start in life, and such work requires coordination between many sectors and institutions to implement comprehensive programmes that – in this context – promote healthy school environments, health and nutrition literacy, and physical activity among school-aged children. WHO is keen to highlight some of the challenges that countries have faced implementing these policies, such as concern from parents that children will not eat the food.

To better understand these concerns and how to address them, WHO has established pilot projects on healthy public food procurement and service policies in schools in Kyrgyzstan, Tajikistan, Ukraine¹¹ and Uzbekistan. The pilot projects involve collaboration with national stakeholders and the organization of technical workshops to raise awareness of the WHO action framework, discuss insights from behavioural science, and plan the next steps at the national level. The projects are then tasked with developing the key messages of a communication campaign – informed by behavioural science – to pilot test the promotion of school nutrition. The plans are for designing campaign messaging, based on research about barriers to supporting new school meal regulations, and then for investigating which version of the campaign materials are most effective in changing attitudes. Improvements will be made to the campaigns based on the findings of these investigations, and recommendations will be made on which version of the campaign to scale up. WHO and country colleagues are working to develop the messaging, with input from a collaborating organization, the Behavioural Insights Team, based on evidence from behavioural science. It is hoped that the evidence from these pilot projects can be used to extend beyond the four pilot Member States.

Healthy public procurement remains an area where much more progress could be made in the Region. Participants were encouraged to inform WHO about experiences in implementing healthy public procurement.

¹⁰ This can mean meals and snacks made from fruit, vegetables and grains, and does not necessarily refer to manufactured plant-based food products.

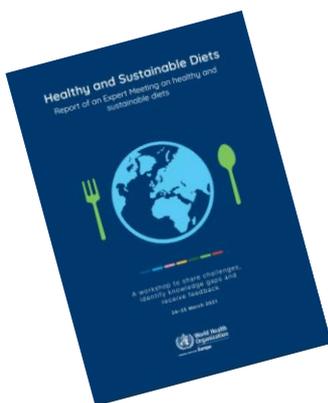
¹¹ Currently paused.

WHO resources to support salt reduction activities

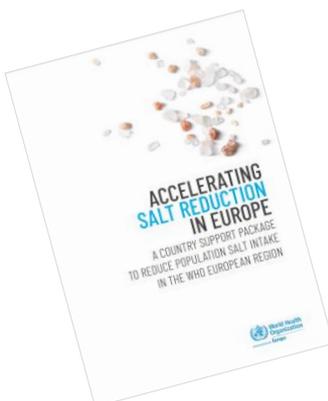
Participants were reminded that a variety of WHO resources are available to support salt reduction activities (see below). Salt reduction is embedded in all these areas of work.



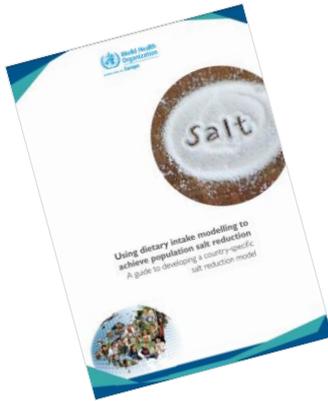
Monitoring and restricting digital marketing of unhealthy products to children and adolescents: report based on the expert meeting on monitoring of digital marketing of unhealthy products to children and adolescents: Moscow, Russian Federation, June 2018 (45)



Healthy and sustainable diets: report of an expert meeting on healthy and sustainable diets. A workshop to share challenges, identify knowledge gaps and receive feedback (49)



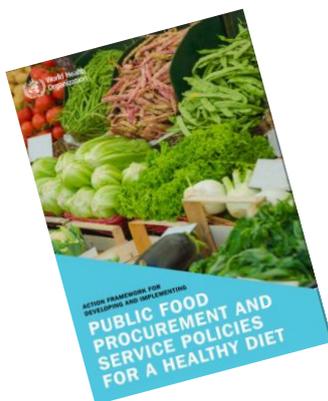
Accelerating salt reduction in Europe: a country support package to reduce population salt intake in the WHO European Region (52)



Using dietary intake modelling to achieve population salt reduction: a guide to developing a country-specific salt reduction model (53)



Ending inappropriate promotion of commercially available complementary foods for infants and young children between 6 and 36 months in Europe: a discussion paper outlining the first steps in developing a nutrient profile model to drive changes to product composition and labelling and promotion practices in the WHO European Region (54)



Action framework for developing and implementing public food procurement and service policies for a healthy diet (55)



How together we can make the world's most healthy and sustainable public food procurement (51)

Discussion and next steps

The issue of portion sizes, and the difficulty in defining criteria based on portion size, was raised. This is a topic that could be on the agenda for future discussion (and which is also an issue of interest for the European Sugar and Calorie Reduction Network). WHO headquarters is working on the development of a guideline on portion size. It was noted that, in Switzerland, work has been done to extract consumed serving sizes from the national survey and data has been published (56).

Suggestions for other topics to be addressed in the future include:

- more information on commercially available complementary foods and the updated WHO nutrient and promotion model;
- online webinars, which could possibly be adapted to the sub-regional level, on the use of tools for monitoring digital marketing;
- the forthcoming nutrient profile models for front-of-pack nutrition labelling, which will be a priority for WHO;
- salt substitutes; and
- the implementation of nutrition standards for hospital meals.

Closing remarks

Michael Beer delivered some closing remarks, noting that there had been very valuable exchanges during this meeting, which was the first in-person meeting since 2019. Countries interested in hosting the next meeting were invited to contact the Secretariat, noting that there would be support available to fund and organize the meeting.

He thanked all participants for their contributions and wished all participants a safe journey home.

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Annex 1. Programme

Programme

Fifteenth Meeting of the European Salt Action Network (ESAN)
29–30 June 2023 – Bern, Switzerland

Day 1

09:00–09:30	Registration
09:30–10:00	Opening remarks and round of introductions <i>Michael Beer</i> , Chair of the European Salt Action Network, Switzerland <i>Kremlin Wickramasinghe</i> , Head <i>a.i.</i> WHO European Office for Prevention and Control of Noncommunicable Diseases (NCD Office) and Regional Adviser for Nutrition, Physical Activity and Obesity Special Initiative on NCDs and Innovation
10:00–11:15	Country update on salt reduction activities Facilitator: <i>Steffi Schluechter</i> , <i>Federal Food Safety and Veterinary Office</i> Croatia: Salt reduction program in Croatia, <i>Bojan Jelakovic</i> , <i>Croatian Hypertension League</i> Hungary: Food reformulation monitoring system in Hungary – the first steps, <i>Eszter Sarkadi-Nagy</i> , <i>National Institute of Pharmacy and Nutrition</i> Ireland: Salt Reduction Programme in Ireland, <i>Sinead O'Mahony</i> and <i>Aideen McCann</i> , <i>Food Safety Authority of Ireland</i> Montenegro: Salt reduction and iodine intake – Situation in Montenegro, <i>Zorica Djordjevic</i> , <i>Enisa Kujundzic</i> , <i>Institute of Public Health of Montenegro</i> North Macedonia: Development of Salt Reduction Program in North Macedonia, <i>Igor Spiroski</i> , <i>Head of Department of Nutrition, Institute of Public Health of North Macedonia</i>
11:15–11:30	Active break
11:30–12:45	Continuation of updates on salt reduction activities in countries Facilitator: WHO Republic of Moldova: Country update, <i>Ion Salaru</i> , <i>National Agency for Public Health</i>

	<p>Slovenia: Iodine and salt intake in the adult population in Slovenia, <i>Urška Blaznik, Environmental Health Centre, National Institute of Public Health Slovenia</i></p> <p>Spain: Salt content reduction initiatives in food in Spain, <i>Maria Jose Yusta Boyo, Spanish Food Safety and Nutrition Agency</i></p> <p>Sweden: Planning for monitoring of effects of voluntary agreements on salt reduction, <i>Åsa Konde, Swedish Food Agency</i></p> <p>Switzerland: Country update, <i>Steffi Schluechter, Federal Food Safety and Veterinary Office</i></p> <p>Netherlands (Kingdom of the): Implementation of food reformulation policy in the Netherlands, <i>Maria van Delft, Directorate Nutrition, Health Protection and Prevention; Ministry of Health Welfare and Sport</i></p>
12:45–13:45	Lunch
13:45–14:45	<p>Global sodium benchmarks</p> <p>Expert Presentation: <i>Rain Yamamoto, Unit of Standards and Scientific Advice, Department of Nutrition and Food Safety, WHO headquarters</i></p> <p>Country example from Italy: Survey on sodium content of selected food groups compared with WHO benchmarks, <i>Veronica Abate, Federico II University in Naples</i></p> <p>Country experience: open discussion</p>
14:45–15:45	<p>WHO Reformulation manual</p> <p>Expert Presentation: <i>Martijn Noort, Wageningen Food and Biobased Research, Netherlands (Kingdom of the)</i></p> <p>Country experience: open discussion</p>
15:45–16:00	Active break
16:00–17:00	<p>Addressing salt intake through front of pack nutrition labelling</p> <p>Expert presentation (online): <i>Mike Rayner, University of Oxford, and Lauren Bandy, University of Oxford</i></p> <p>Country experience: open discussion</p>
17:00	Closing of the day
18:00	Walk through the old town of Bern (meeting point “Loeb”)
19:00	Dinner at Ristorante Verdi (Gerechtigkeitsgasse 7, 3011 Bern)

Day 2

09:00–09:10	Welcome and recap of day 1 Facilitator: <i>Kremlin Wickramasinghe</i>
09:10–11:00	Iodine and salt Facilitator: <i>Clare Farrand, Technical Officer, Special Initiative on NCDs and Innovation, WHO Regional Office for Europe</i> Expert presentation: Iodine intake in Europe: Synergies between salt iodization and sodium reduction strategies, <i>Maria Andersson, Nutrition Research Unit, University Children’s Hospital Zürich</i> Country example: Iodine in Swiss milk and cheese: <i>Kathryn Burton-Pimentel, Agroscope, Human Nutrition, Sensory Analysis and Flavour Group</i> Country example: Relationship between sodium and iodine intake in the Italian population, <i>Veronica Abate, Federico II University in Naples</i> Country experience: open discussion
11:00–11:30	Marketing of unhealthy foods to children Expert presentation: <i>Kathrin Hetz, Consultant, Special Initiative on NCDs and Innovation, WHO Regional Office for Europe</i> Country experience: open discussion
11:30–11:45	Active break
11:45–12:15	WHO procurement manual Expert presentation: <i>Clare Farrand, Technical Officer, Special Initiative on NCDs and Innovation, WHO Regional Office for Europe</i> Country experience: open discussion
12:15–12:50	Discussion and next steps Facilitator: <i>Kremlin Wickramasinghe</i>
12:50–13:00	Closing remarks <i>Michael Beer, Chair of the European Salt Action Network, Switzerland</i> <i>Kremlin Wickramasinghe, Head a.i. WHO NCD Office and Regional Adviser for Nutrition, Physical Activity and Obesity Special Initiative on NCDs and Innovation</i>
13:00–14:00	Goodbye lunch

Annex 2. List of participants

Croatia

Bojan Jelaković
Croatian Hypertension League

Denmark

Iben Kristensen
Danish Veterinary and Food
Administration

Estonia

Hanna Alajõe
National Institute for Health Development
of Estonia

Georgia

Lela Sturua
National Centre for Disease Control and
Public Health

Hungary

Eszter Sarkadi-Nagy
National Institute of Pharmacy and
Nutrition

Ireland

Aideen McCann
Food Safety Authority of Ireland

Sinead O'Mahony
Food Safety Authority of Ireland

Italy

Veronica Abate
Frederico II University

Lithuania

Indre Makarskiene
Ministry of Health of the Republic of
Lithuania

Montenegro

Zorica Djordjević
Institute of Public Health of Montenegro

Enisa Kujundzic
Institute of Public Health of Montenegro

Netherlands (Kingdom of the)

Elly Steenbergen
National Institute for Public Health and
the Environment

Maria van Delft
Ministry of Health

North Macedonia

Igor Spiroski
Institute of Public Health of North
Macedonia

Portugal

Mariana Coelho Santos
National Institute of Health

Republic of Moldova

Ion Salaru
National Agency for Public Health

Slovenia

Urška Blaznik
National Institute of Public Health

Spain

Maria Jose Yusta-Boyo
Spanish Agency for Food Safety and
Nutrition

Sweden

Åsa Konde
Swedish Food Agency

Switzerland

Michael Beer
Federal Food Safety and Veterinary Office

Lilian Bruggmann
Federal Food Safety and Veterinary Office

Elodie Collomb
Federal Food Safety and Veterinary Office

Judith Jenny-Burri
Federal Food Safety and Veterinary Office

Carol Meylan
Federal Food Safety and Veterinary Office

Steffi Schluechter
Federal Food Safety and Veterinary Office

Clara Benzi Schmid
Federal Food Safety and Veterinary Office

Speakers

Maria Andersson
Nutrition Research Unit
Switzerland

Lauren Bandy
University of Oxford

Margarida Bica
University of Oxford

Kathryn Burton-Pimentel
Agroscope
Switzerland

Martijn Noort
Wageningen Food and Biobased Research
Netherlands (Kingdom of the)

Mike Rayner
University of Oxford

WHO headquarters

Rain Yamamoto
Department of Nutrition and Food Safety

WHO Regional Office for Europe

Clare Farrand

Kathrin Hetz

Kremlin Wickramasinghe

Rapporteur

Karen McColl

The WHO Regional Office for Europe

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