



# CSE LAB STUDY ON **JUNK FOOD**

December 17, 2019



**The Centre for Science and Environment (CSE) is a public interest research and advocacy organisation based in New Delhi**

## **Overview**

**CSE researches, lobbies for and communicates the urgency of development that is both sustainable and equitable**

## **Food safety**

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**Our objective is to ensure the food-nutrition-health connection. We believe India cannot afford to first eat bad food – high in toxins or empty nutrients – and then worry about good food**

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# CSE's Environment Monitoring lab (EML)

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Set up in 2000 for monitoring air pollution, water pollution and food contamination

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Tests for pesticides, antibiotics, heavy metal, nutrients and conducts microbiological and molecular biology studies

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Investigates issues of public health concerns and responds to community requests

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Puts out independent information in public domain for ecological security

# Wide-range of studies conducted by EML for about two decades

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## FOOD

- 2003:** Pesticide residues in bottled water
- 2003 & 2006:** Pesticides in soft drinks
- 2009:** Trans fats in edible oil
- 2010:** Antibiotics in honey
- 2011:** Caffeine in energy drinks
- 2012:** Nutritional analysis of junk food
- 2014:** Antibiotic residues in chicken meat
- 2016:** Potassium bromate/iodate in bread
- 2018:** Genetically modified processed foods in India

## CONSUMER PRODUCTS

- 2009:** Lead in paints
- 2010:** Pthalates in toys
- 2014:** Heavy metals in cosmetics

## ENVIRONMENT

- 2001:** Endosulphan poisoning
- 2005:** Pesticides in the blood of Punjab cotton farmers
- 2009:** Ground water contamination in and around UCIL, Bhopal
- 2012:** Mercury poisoning in Sonbhadra, UP
- 2017:** Antibiotic resistance in poultry environment

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### **2019 Lab study**

**Analysis of salt, total fat, trans fat and carbohydrates in junk food – food that is growing in popularity and has been globally indicted for bad health**



# Why we tested? Is food 'Red'

- In 2012, a CSE lab study found high levels of fat, salt and sugar in junk foods; we pushed for strong labelling regulations thereafter
- But regulations not there yet. The draft FSS (Labelling and Display) Regulations **2018** and latest draft of **2019** proposed that foods containing more than set thresholds to be labelled 'Red' on the front-of-pack
- **The proposed red label has been a point of contention and a reason for delay**

**We decided to check if junk foods would be  
RED based on the thresholds set**

## Analysis of salt, total fat, trans fat and carbohydrate in junk food

Investigators

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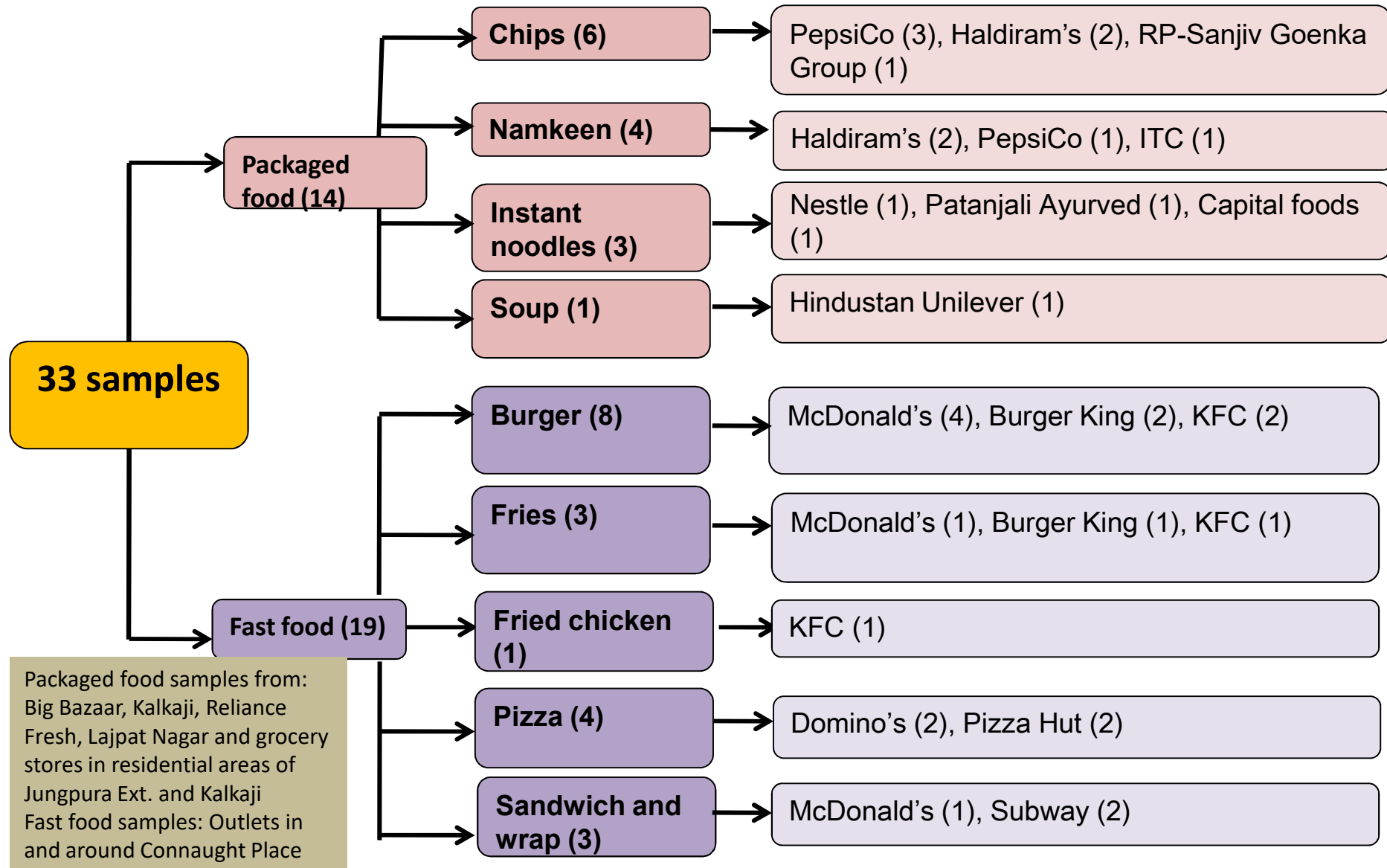
(A unit of Centre for Science and Environment, New Delhi)

No. 2151/2036 & 2037/2083

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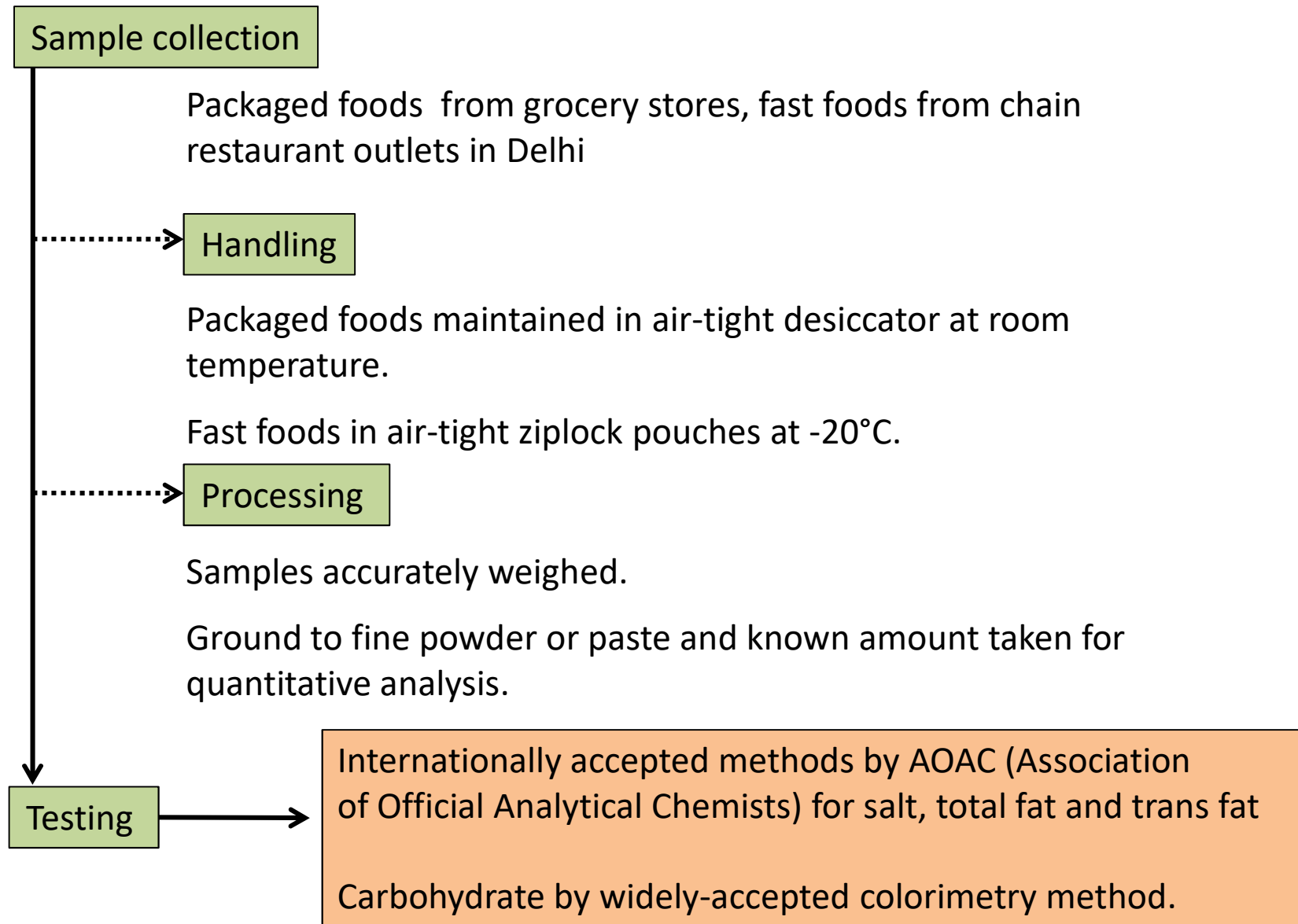
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## We tested popular packaged and fast food samples from Delhi which are also sold across the country



# Sample collection and methods

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# Lab results for packaged foods

Sample	Measured weight (g)	Salt (g/100g)	Total fat (g/100g)	Trans fat (g/100g)	Carbohydrate (g/100g)
<b>Chips</b>					
Lay's India's Magic Masala by PepsiCo	51.75	1.94	32.5	0.21	51.53
Lay's American Style Cream and Onion Flavour by PepsiCo	52.75	1.55	29.19	0.27	48.96
Uncle Chipps Spicy Treat by PepsiCo	55.25	2.81	35.04	0.17	51.81
Classic Salted Chips by Haldiram's	61.2	1.38	36.52	0.33	52.19
Pudina Treat Chips by Haldiram's	16.38	2.28	36.70	0.23	52.93
Too Yumm Multigrain Chips Chinese Hot and Sour by RP-Sanjiv Goenka Group	89	3.23	17.17	0.08	64.85
<b>Namkeen</b>					
Classic Nut Cracker by Haldiram's	231.65	4.99	44.79	0.56	17.66
Aloo Bhujia by Haldiram's	231.14	3.05	43.48	0.33	34.69
Bingo! Mad Angles Delight Achaari Masti by ITC	80.7	1.69	42.94	0.22	53.71
Kurkure Masala Munch by PepsiCo	49.97	2.49	34.03	0.20	54.90
<b>Instant noodles</b>					
Maggi Masala by Nestle	71.20	3.69	14.93	NT*	62.18
Atta Noodles Chatpata by Patanjali Ayurved	60.40	3.95	22.06	NT	51.23
Ching's Secret Schezwan by Capital Foods	60.35	4.25	17.82	NT	53.80
<b>Soup</b>					
Knorr Classic Thick Tomato Soup by Hindustan Unilever	51.90	10.44	8.43	NT	64.61

\*NT = Not tested

# Lab results for fast foods

Sample	Measured weight (g)	Salt (g/100g)	Total fat (g/100g)	Trans fat (g/100g)	Carbohydrate (g/100g)
<b>Burger</b>					
Cheese Whopper Veg by Burger King	259.47	1.36	13.88	0.19	20.22
Cheese Whopper Chicken by Burger King	258.08	1.35	10.65	0.16	12.51
Veg Zinger (with cheese) by KFC	250.31	1.54	10.89	0.10	19.69
Chicken Classic Zinger (with cheese) by KFC	252.84	1.22	19.47	0.20	16.41
McVeggie Burger by McDonald's	153.95	1.22	9.95	0.08	33.16
McAloo Tikki Burger by McDonald's	141.25	1.02	9.11	0.08	29.16
McChicken Burger by McDonald's	145.31	1.11	9.51	0.08	27.68
Chicken Maharaja Mac by McDonald's	317.40	1.45	10.05	0.05	20.25
<b>Fries</b>					
Fries (regular) by Burger King	92.26	0.85	13.6	0.12	25.98
Fries (medium) by KFC	91.76	0.47	14.9	0.15	25.94
Fries (medium) by McDonald's	79.25	0.71	14.48	0.15	44.77
<b>Fried chicken</b>					
Hot Wings (4 pieces) by KFC	88.91*	1.44	21.42	0.14	10.51
<b>Pizza**</b>					
Peppy Paneer Cheese Burst (regular) by Domino's	342.57	1.34	9.55	0.21	20.40
Non-veg Supreme (regular) by Domino's	355.01	1.41	12.31	0.22	26.53
Classic Tomato Margherita (personal) by Pizza Hut	221.78	1.18	7.4	0.23	35.81
Chicken Supreme (personal) by Pizza Hut	306.74	1.70	10.32	0.23	26
<b>Sandwich and wrap</b>					
Big Spicy Paneer Wrap by McDonald's	255.14	1.58	17.71	0.24	21.12
Paneer Tikka (6 inch) by Subway	263.61	1.38	18.27	0.23	16.83
Chicken Seekh Kabab (6 inch) by Subway	280.48	1.88	13.9	0.22	16.95

\*without bone; \*\*Pizza tested with 1 sachet of oregano provided alongside

## Analysis

But these are numbers – they confuse consumers

We wanted to know what this means for our health; our intake of nutrients – salt, sugar and fat

2 ways:

1. What does it mean in terms of Recommended Dietary allowance?
2. What does it mean in terms of the thresholds -- limits given by FSSAI – beyond which food is to be marked **RED**



# 1. RDA: How much of salt, sugar, fat you are allowed to consume in day is taken up by eating this food?

Lab results in g per 100 g for salt, total fat, trans fat and carbohydrate

- Used to calculate actual intake of a nutrient based on serving size (packaged food) or weight of the product (fast food) in g
- Intake value is compared with RDA / upper limit of a nutrient and expressed as a percentage of it.
  - RDA considered for a person requiring 2000 Kcal is **5g for salt, 60 g for fat and 300g for carbohydrate; 2.2 g limit is considered for trans fat** (WHO, NIN and expert groups)
  - Further, considering three meals and two main snacks in a day, RDA from each meal and a snack is considered 25% and 10% of RDA for the day respectively.

Sample	Serving size /weight (g)* A	Lab result fat (g/100g) B	Intake (g) as per single serving $C=(A*B)/100$	RDA exhausted $D=C/60g$ (%)
Classic Nut Cracker by Haldirams	35	44.79	15.68	26.1
Cheese Whopper Chicken by Burger King	258.1	10.65	27.49	45.8

\*Serving size declared on packaged food and weight of fast food measured by CSE is used for analysis

## Packaged foods typically consumed as snacks lead to high intake of salt and fat; noodles exhaust maximum RDA of salt

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RDA  
Salt: 5 g  
Fat: 60 g

### Chips

- All chips provide more salt, fat or both than one can have from a snack
- One serve (30 g) of Too Yumm Multigrain Chips had maximum salt (1 g) which is double the allowance of salt from a snack

### Namkeens

- All namkeens provide salt as well as fat more than what could be sourced from a snack
- One serve (35g) of Haldiram's nut cracker exhausts **35%** salt RDA and **26%** fat RDA—much higher than one can have from one full meal

### Noodles

- Nestle Maggi Masala's one serve (70 g) exhausts over **50%** salt RDA (day); others similar salt intake
- Noodles due to relatively bigger serving lead to highest salt intake among packaged foods

### Soup

Knorr Classic Thick Tomato soup exhausts **~28%** of salt RDA (day)

# Fast foods due to big portion size eat up almost all RDA for the day

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RDA  
Salt: 5 g  
Fat: 60 g

## Burger

- Burgers with big portion size exhaust a significant portion of salt and fat RDA
- One KFC Chicken Classic Zinger with cheese will exhaust **~62% salt RDA and 82% fat RDA**; Chicken classic zinger meal box (combo – burger and fries) exhausts **83% salt and 120% fat RDA**.
- Burger King 'Cheese Whopper veg' has 3.5g salt and exhausts **~70% of salt RDA and 60% fat RDA**. Its chicken option will exhaust **~70% of salt RDA and ~46% fat RDA**

## Pizza

- Non-veg Supreme (Regular) by Domino's and Chicken Supreme (Personal) by Pizza Hut leave no scope of salt for the day (**exhaust 99.9% and 104% RDA**). Similar is the case with Peppy Paneer cheese burst (Regular) by Domino's (**exhaust 92% RDA**).
- Non-veg Supreme (Regular) also exhausts **over 70% fat quota** and Chicken Supreme (Personal) has over 50% of daily fat quota

## Sandwich and wraps

- Sandwiches and wraps are also loaded with salt and fat.
- A 6 inch Chicken Seekh Kabab by Subway exhausts all salt limit (**105%**) and about **65% of fat**. Paneer Tikka (6 inch) by Subway also exhausts over **70% and 80% of salt and fat intake**.

# McDonald's - reality check !

RDA  
Salt: 5 g  
Fat: 60 g



RDA exhausted by Chicken  
Maharaja Mac with 4.6g salt  
31.9g fat in it



- With a combo of McChicken, one loses nearly half of the daily quota of salt and fat in just one meal. It's the same situation for the McVeggie meal
- Big Spicy Paneer Wrap exhausts over **80%** and **75%** of salt and fat RDA

“Stuck with ghiya-tori again? Make the 1+1 combo you love” **Encouraging substitution with healthy meals**

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## Analysis (Part 2)

To know if the levels  
cross or not the limits set  
for a food product





# Analysis done to understand if nutrients in a food cross the thresholds set by FSSAI – as a condition to label **RED**

## Lab results in g per 100 g for salt and total fat

- Used to check if values exceed thresholds for salt and total fat set by FSSAI as per 100 g/ml
  - 0.25 g sodium** per 100 g: savoury snacks and instant noodles
  - 0.35 g sodium** per 100 g: soup and fast foods
  - 8.0 g of total fat** per 100 g: savoury snacks, instant noodles, soup and fast foods
- If it does, the food is to be labelled **RED** (see Octagon symbol as a warning label)
- To know the extent, calculate the value as times of the threshold (depicted inside warning label)

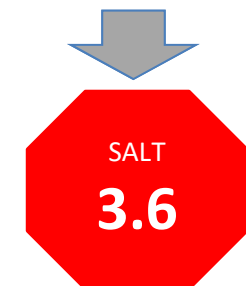
Draft (Labelling and Display) Regulations, **2019**

Draft (Labelling and Display) Regulations, **2018**

	Sample	Lab result salt (g/100g)	Times threshold	Label <b>RED</b>
Salt	Pudina Treat Chips by Haldirams	2.28 (0.90 sodium)*	$0.90/0.25 =$	<b>3.6</b>
Fat	Classic Nut Cracker by Haldirams	44.79	$44.79/8.0 =$	<b>5.6</b>

\*Salt (g)/2.54 is sodium (g)

Adapted from a black octagon warning sign in Chile and few other countries – a new global best practice



# All chips would be red for salt and fat

Threshold

Sodium: 0.25 g / 100 g

Fat: 8 g / 100 g



Lay's India's  
Magic Masala  
by PepsiCo



Lay's American  
Style Cream  
and Onion Flavour  
by PepsiCo



Uncle Chippis  
Spicy Treat by  
PepsiCo



Classic Salted  
Chips by  
Haldiram's



Pudina Treat  
Chips by  
Haldiram's



Too Yumm  
Multigrain Chips  
by RP-Sanjiv  
Goenka Group



Very high  
in both salt  
and fat



Declares  
salt; rest all  
mention sodium



Highest  
fat



Highest salt;  
sold as a  
healthy option

- Serving size not mentioned on both Haldiram's chips; Too Yumm refers to a pictorial reference for serving suggestion (which depicts 4 chips). In fact, these attract consumers by offering extra chips

## All namkeens would be red for salt and fat

Threshold

Sodium: 0.25 g / 100 g

Fat: 8 g / 100 g



Classic Nut  
Cracker by  
Haldiram's

SALT  
7.9

FAT  
5.6



Aloo Bhujia  
by  
Haldiram's

SALT  
4.8

FAT  
5.4



Bingo! Mad Angles  
Delight Achaari  
Masti by ITC

SALT  
2.7

FAT  
5.4



Kurkure Masala  
Munch by  
PepsiCo

SALT  
3.9

FAT  
4.3

Highest salt and  
fat

- Bingo! Mad Angles and Kurkure Masala Munch declare sodium; Haldiram's namkeens do not declare sodium or salt
- Haldiram's mentions serving size on the website and not on pack but provide extra namkeen; serving size not mentioned on Bingo! Mad Angles

Threshold  
Sodium: 0.25 g / 100 g  
Fat: 8 g / 100 g

## All noodles would be red for salt and fat



Maggi Masala  
by Nestlé



Atta Noodles  
Chatpata by  
Patanjali Ayurved



Ching's Secret  
Schezwan by  
Capital Foods



- All noodles have very high salt content
- Among the tested packaged foods, the salt intake is higher with noodles because of the bigger portion size (60g-70g) as well as higher per 100 g values

# Soup otherwise considered healthy can lead to high salt intake

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Threshold  
Sodium: 0.35 g / 100 g  
Fat: 8 g / 100 g



Knorr Classic  
Thick Tomato  
Soup



Knorr Classic Thick Tomato soup has high content of salt



## Burgers tested would be red for both salt and fat

Threshold  
Sodium: 0.35 g / 100 g  
Fat: 8 g / 100 g



Cheese  
Whopper Veg by  
Burger King

SALT  
1.5

FAT  
1.7



Cheese Whopper  
Chicken by  
Burger King

SALT  
1.5

FAT  
1.3



Veg Zinger  
(with cheese)  
by KFC

SALT  
1.7

FAT  
1.4



Highest salt



Chicken Classic  
Zinger (with  
cheese) by KFC

SALT  
1.4

FAT  
2.4



Highest fat

- Burgers due to their portion size (weight) lead to high intake of salt and fat

## Even smaller burgers will be red for salt and fat

Threshold  
Sodium: 0.35 g / 100 g  
Fat: 8 g / 100 g



McVeggie  
Burger by  
McDonald's



McAloo Tikki  
Burger by  
McDonald's



McChicken  
Burger by  
McDonald's



Chicken  
Maharaja Mac  
by McDonald's



- Despite similar values, big burgers like Chicken Maharaja Mac lead to much higher intake

# Fries would be red for fat

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Threshold

Sodium: 0.35 g / 100 g

Fat: 8 g / 100 g



Fries (regular)  
by Burger  
King

SALT  
**1.0**



Fries from all three fast food restaurants  
have high fat

Fries  
(medium) by  
KFC

SALT  
**0.5**



Fries (medium)  
by McDonald's

SALT  
**0.8**





# Fried chicken would be red

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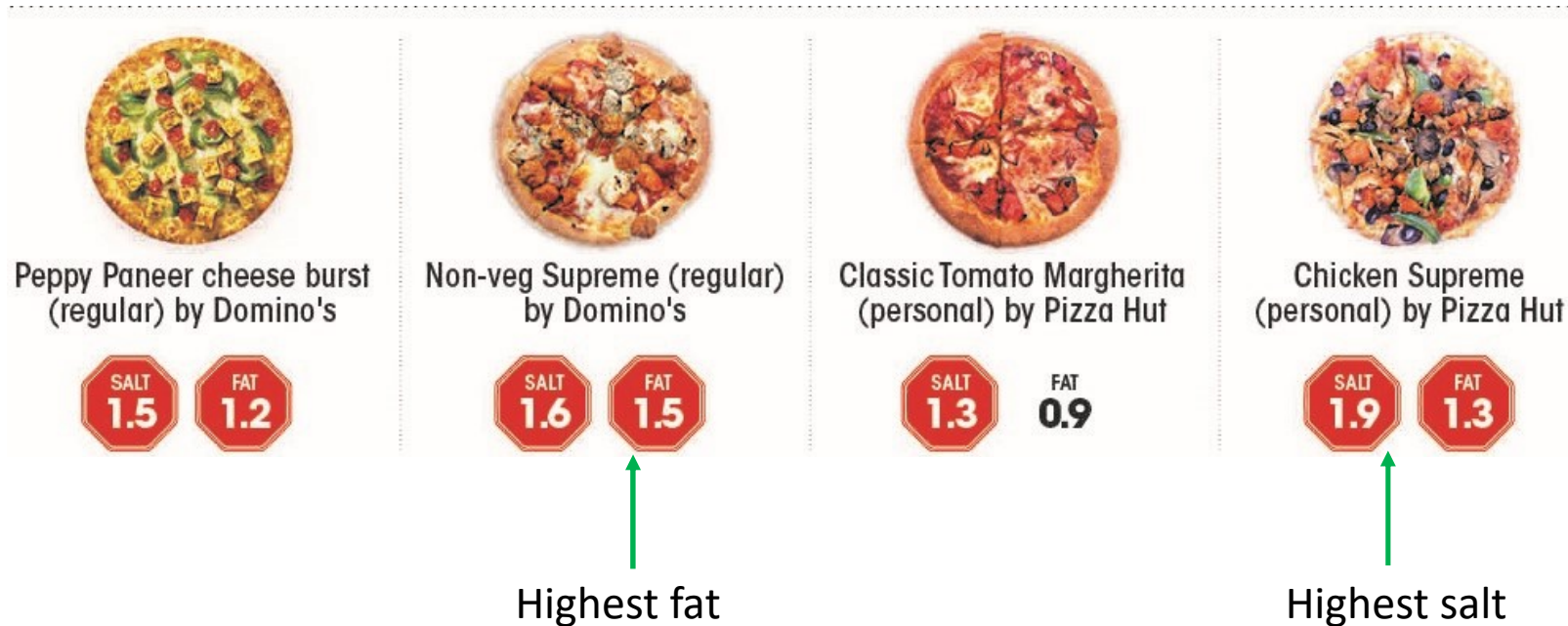
Threshold  
Sodium: 0.35 g / 100 g  
Fat: 8 g / 100 g



Fried chicken sold by KFC is high in both salt and fat and will be Red for both.

# All pizzas would be red

Threshold  
Sodium: 0.35 g / 100 g  
Fat: 8 g / 100 g



- The actual intake of salt and fat is very high because of the big portion size

# All sandwiches and wraps would be red for both salt and fat

Threshold  
Sodium: 0.35 g / 100 g  
Fat: 8 g / 100 g



↑  
Perceived healthy; but has high fat and salt

- Portion size results in very high intake of salt and fat

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### **Analysis (Part 3)**

**To know if trans fat are  
labelled correctly**

**Trans fat very bad for us  
– global concern and  
clear link to heart  
disease**



# Analysis revealed misleading labels of trans fats in packaged foods

Samples tested for trans fat	Declared value (g/100g)	Lab result (g/100g)	Deviation (%)
<b>PACKAGED FOODS</b>			
Lay's India's Magic Masala by PepsiCo	0.1	0.21	111.6
Lay's American Style Cream and Onion Flavour by PepsiCo	0.1	0.27	168.8
Uncle Chipps Spicy Treat by PepsiCo	0.1	0.17	69.5
Classic Salted Chips by Haldiram's	0.1	0.33	230.0
Pudina Treat Chips by Haldiram's	0.1	0.23	127.6
Too Yumm Multigrain Chips Chinese Hot and Sour	0.2	0.08	(-)61.6
Classic Nut Cracker by Haldiram's	0.1	0.56	460.1
Aloo Bhujia by Haldiram's	0.1	0.33	232.1
Bingo! Mad Angles Delight Achaari Masti by ITC	0.1	0.22	120.0
Kurkure Masala Munch by PepsiCo	0.1	0.2	100.0

Almost all packaged foods were found to have much higher trans fats than declared on package by companies

Highest deviation



# High trans fat intake through most fast foods; but few mention correctly or declare at all

Samples tested for trans fat	Declared value (g/100g)	Lab result (g/100g)	Deviation (%)
<b>FAST FOODS</b>			
Cheese Whopper Veg by Burger King	0	0.19	-
Cheese Whopper Chicken by Burger King	0	0.16	-
Veg Zinger (with cheese) by KFC	0	0.10	-
Chicken Classic Zinger (with cheese) by KFC	0	0.20	-
McVeggie Burger by McDonald's	0.06	0.08	33.3
McAloo Tikki Burger by McDonald's	0.07	0.08	14.3
McChicken Burger by McDonald's	0.12	0.08	(-)33.3
Chicken Maharaja Mac by McDonald's	0.07	0.05	(-)28.6
Fries (regular) by Burger King	0	0.12	-
Fries (medium) by KFC	0	0.15	-
Fries (medium) by McDonald's	0.09	0.15	66.7
Hot Wings (4 pieces) by KFC	0	0.14	-
Peppy Paneer cheese burst (regular) by Domino's	ND*	0.21	-
Non-veg Supreme (regular) by Domino's	ND*	0.22	-
Classic Tomato Margherita (personal) by Pizza Hut	<0.1	0.23	-
Chicken Supreme (personal) by Pizza Hut	0	0.23	-
Big Spicy Paneer Wrap by McDonald's	0.22	0.24	9.1
Paneer Tikka (6 inch) by Subway	ND*	0.23	-
Chicken Seekh Kabab (6 inch) by Subway	ND*	0.22	-

- Burger King and KFC mention '0g' but Cheese Whopper veg and Classic Chicken Zinger with cheese lead to high trans fat intake (>20% of daily limit).
- Domino's and Subway do not mention. But both pizza sold by Domino's exhaust over 30% limit along with the Chicken Supreme pizza of Pizza Hut.
- Both Subway sandwich cross 25% of the limit along with Paneer wrap by McDonalds.

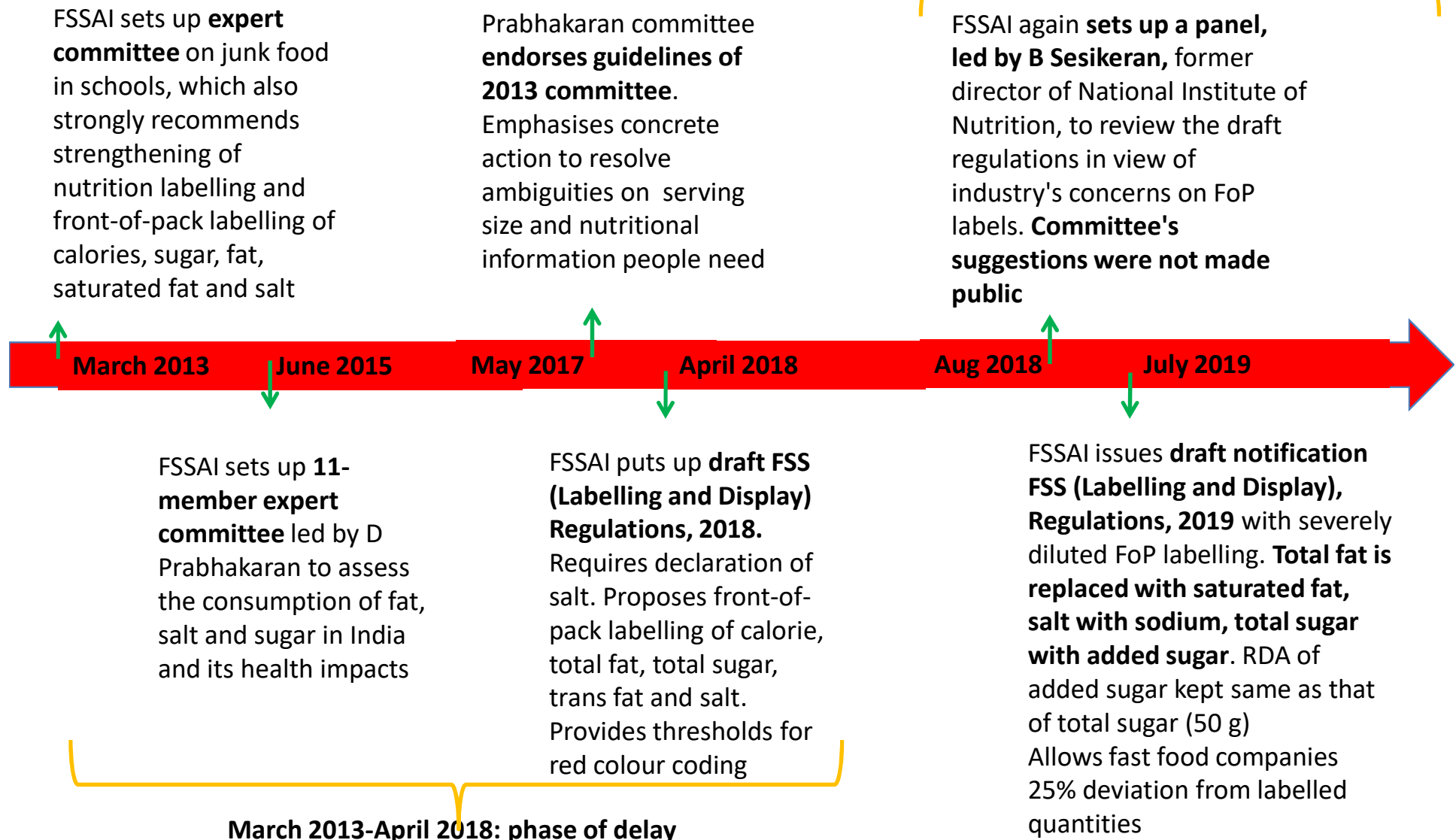
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**Delay and Dilution**  
**Labelling and Display**  
**Regulations**



# Saga of delay and dilutions: 6 years and 3 committees; yet a weak draft waiting to be notified for 5 months

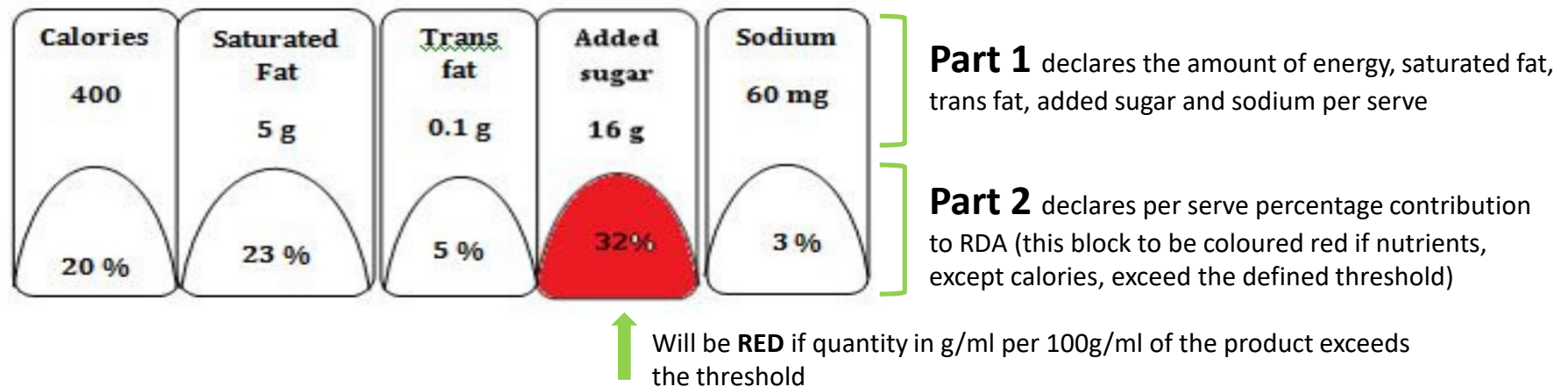
April 2018 onwards: phase of delay and dilution





# FoP proposed in the draft Food Safety and Standards (Labelling and Display) Regulations, 2019

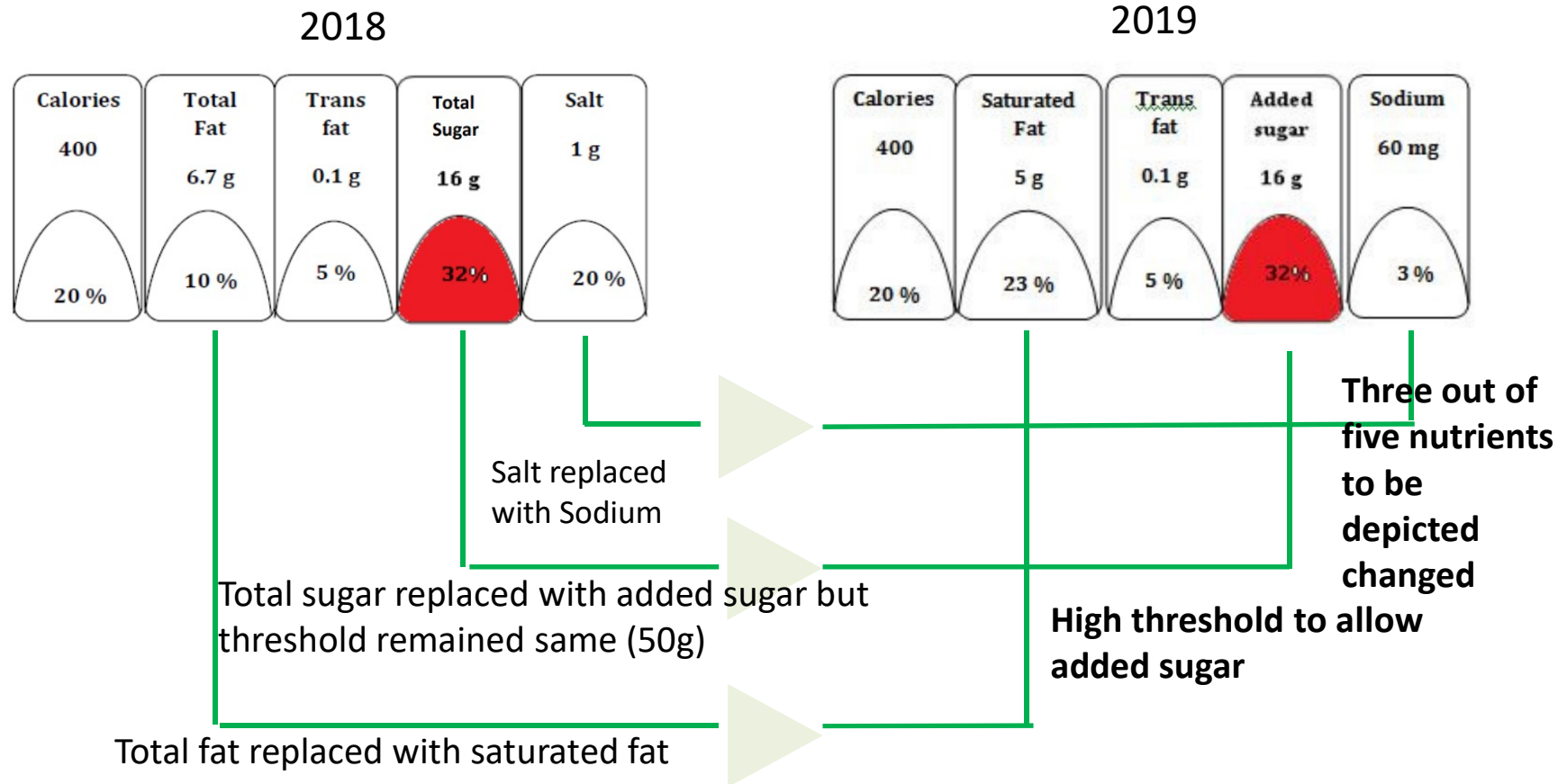
## Front of pack label



## Thresholds – conditions for marking red

Sodium	Savoury snacks such as chips and namkeens, and instant noodles – 0.25g/100g, soups and prepared foods such as burger, pizza, fries, sandwiches – 0.35g/100g
Added sugar	Value of energy (kcal) from added sugar is more than 10% of the total energy provided by the 100 g/ml of the product
Trans fat	Value of energy (kcal) from trans-fat is more than 1% of the total energy provided by the 100 g/ml of the product

# Dilution from 2018 draft labelling regulations



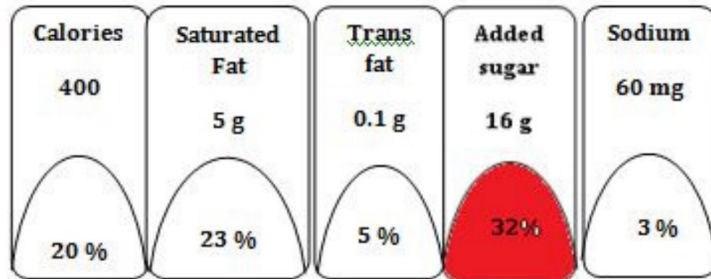
- Compliance to thresholds for FoP extended from two to three years
- Fast foods allowed a deviation of upto 25% in labelled nutrients

# Dilution favours the industry

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- **Sodium instead of salt**
  - Sodium is hardly understood by people in India
- **Saturated fat instead of total fat**
  - Only addresses a part of the problem
  - May develop a wrong perception that other fats are not unhealthy; Ignores that all fats contribute equally to calorie
  - Does not address obesity among growing children – resulted by total fats; focuses on people at later stage of lives instead of children (key target group of fast foods)
- **Added sugar instead of total sugar**
  - Only addresses a part of the problem; added sugar is a subset
  - High RDA (50g) for added sugar makes thresholds weak (along with exemption to beverages offering 80 Kcal per serve will help beverages with added sugar avoid red labelling)

# Design issues in proposed FoP in India as compared to the new global best practices of warning symbols



## Serious design issues

- Contains complicated numbers that makes it difficult to understand
- Gives mixed message w.r.t. non-red blocks. FSSAI has also kept the option of additional colours – which could be green and make the label ineffective
- Draft does not specify the size and placement of the label



- Chile and Peru - **Black octagonal warning labels** with **white outline** that differentiates the label; **Icon-based warning labels** proposed in Israel.
- No complex numbers
- Emphasis laid on making labels noticeable by defining **size of label** and **placement on the upper panel** of the label

**Junk food is no less than danger; people must be warned about both packaged and fast food through noticeable warning symbols**

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- **India's food regulator, FSSAI must notify the draft immediately; should take into account nutrients mentioned in the 2018 draft on FoP i.e. salt, total fat, and total sugar instead of sodium, saturated fat and added sugar**
- **Consider a red octagon symbol that is easily interpreted and helps transcend the literacy and language barriers**
- **Red warning labels should also be applicable to fast food**

# Thank you!

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For lab study

Cseindia.org

For detailed story

Downtoearth.org.in