# Safe Food Safe Environment
# Motto for a Food manufacturer

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- Key facts WHO

- Safe and Nutritious food is key to sustaining life and promoting good health.

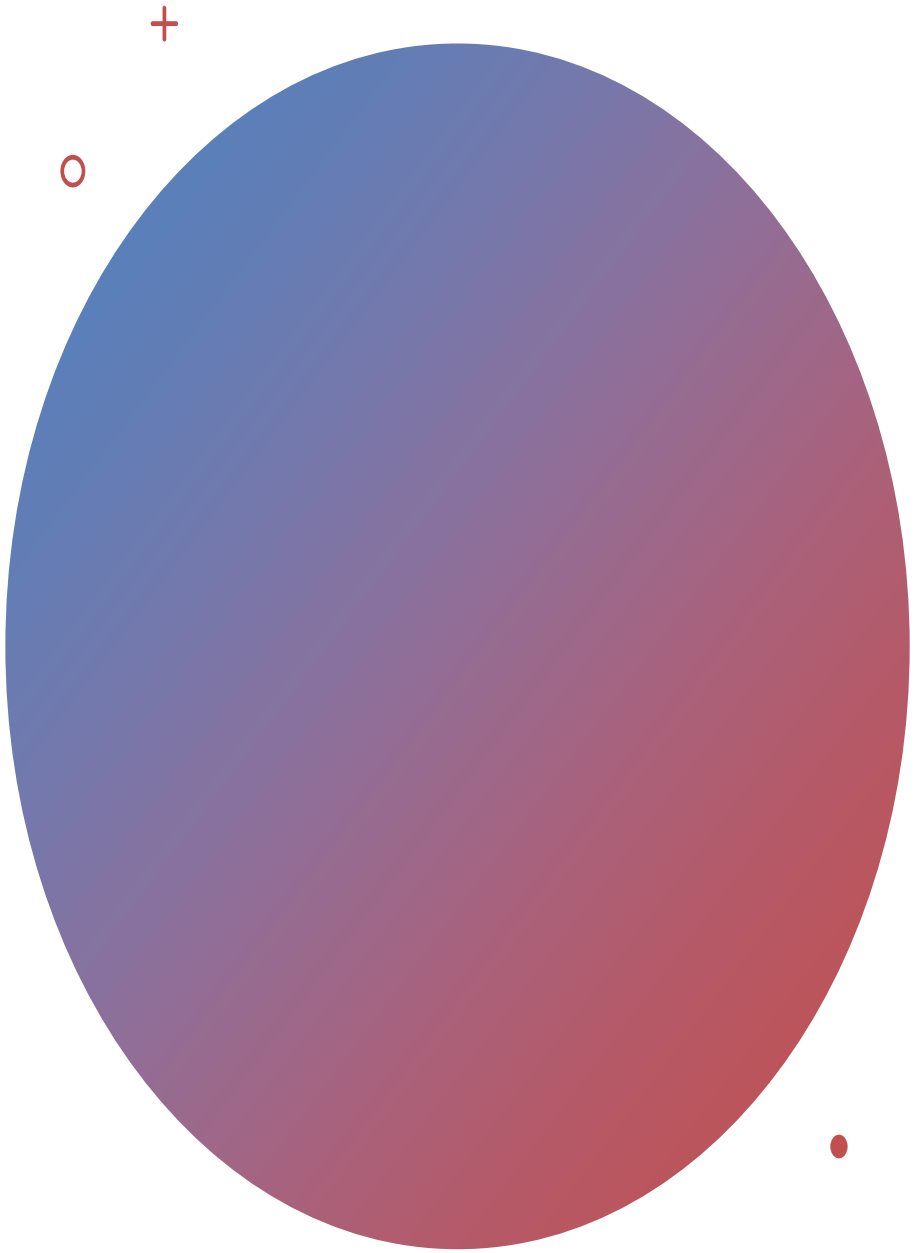
- Unsafe food containing harmful bacteria, viruses, parasites or chemical substances, causes more than 200 diseases – ranging from diarrhea to cancers.

- An estimated 600 million – almost 1 in 10 people in the world – fall ill after eating contaminated food and 420 000 die every year, resulting in the loss of 33 million healthy life years (DALYs).

- US$110 billion is lost each year in productivity and medical expenses resulting from unsafe food in low- and middle-income countries.

- Children under 5 years of age carry 40% of the foodborne disease burden, with 125 000 deaths every year.

- Diarrhoeal diseases are the most common illnesses resulting from the consumption of contaminated food, causing 550 million people to fall ill
- 230 000 deaths every year.



- Food safety, nutrition and food security are inextricably linked.

- Unsafe food creates a vicious cycle of disease and malnutrition, particularly affecting infants, young children, elderly and the sick.

- Foodborne diseases impede socioeconomic development by

Straining health care systems

Tourism and trade.

- Food supply chains now cross multiple national borders.

- Good collaboration between governments, producers and consumers helps ensure food safety.

# Other Outcomes of unsafe food

- Hospitalization costs and burden.
- Antibiotic use leading to resistance
- Disrepute, Penalties, Closure, Job losses


- **<u>Biological agents contaminating food</u>**
- Avoid- use Good Hygiene Practices
- HACCP practices
- Source good raw material with checks
- Personnel Hygiene and their safety
- Quality control of finished product
- Proper waste disposal and recycling

# Unsafe food due to contaminants

- Chemical residues
- Antibiotics
- Hormones
- Toxins
- Adulterants
- Unapproved additives
- Plastics and associated chemicals

# Unsafe Food - Nutritional

- Quantitative-
- Ingredients are safe but the amounts are unsafe
- Eg  HFSS foods-

# Am J Clin Nutrition 18 Dec 2020

- Bonnacia et al
- Ultra Processed Food consumption is associated with increased risk of all-cause and cardiovascular mortality in the Moli-sani study
- -Partly through its high dietary content of sugar

# Unsafe Food - Nutritional

- Qualitative
- Unsafe ingredients eg Trans Fat, Recycled cooking oil-

- Nutritionally inadequate foods marketed to vulnerable groups with unsubstantiated claims eg Immunity Boosting, Memory enhancers , increase in growth etc

# Environmental Impact of Food Processing

- Difficult to assess
- Mostly by indirect means
- Agricultural activities generate about 26% of GHG

# Food Industry drives agricultural practices

Industry creates the demand

Farming is always associated with commercially viable crops

Quality nutritional crops may not be cultivated if there is no demand

# Major cause for changes in environment-Agriculture

- Agricultural food production to consumption

- Soil organisms
- Soil micronutrients
- Water depletion-Water foot print
- Chemicals – pesticides, herbicides, fertilizers
- Animal husbandry and grain production - $CO_2$ and greenhouse gases

Disturbing the ecosystem

# Major Environment Concern

Food Packaging

# Recycling times for materials

- Plastic – once
- Polystyrene – once
- Cardboard – 3 to 4 times
- Paper – 5 to 7 times
- Glass – infinitely
- Aluminum, copper and other metals – infinitely
- (www.edupliance.com)

# Plastic Packaging

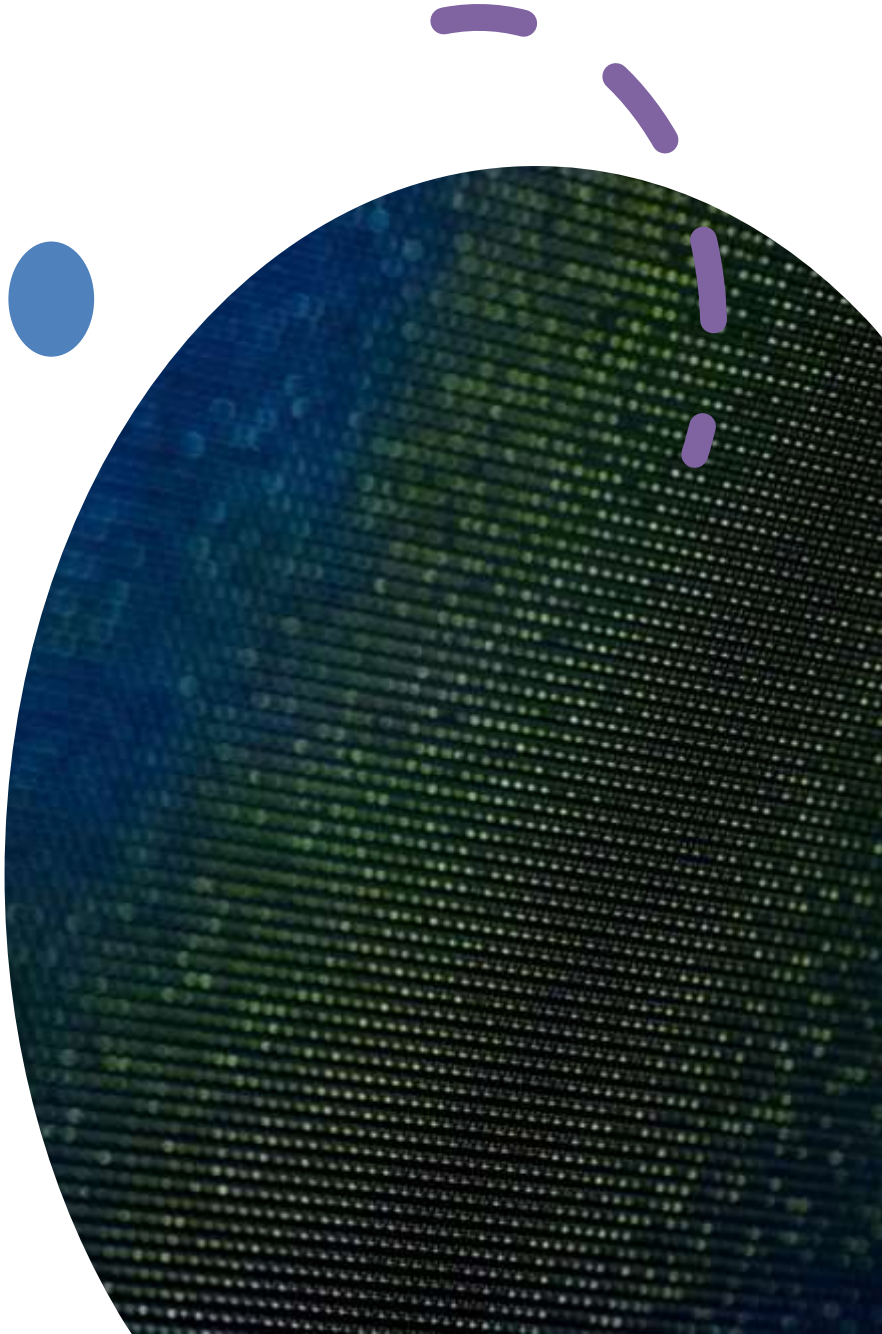
- 78 million metric tons / year globally
- 14%  is recycled (www.ellenmacarthurfoundation.org)
- 9 million tons goes into the ocean
- Will increase as we shift to consuming more packaged foods
- Recycling plastics requires, energy, water and transport (National Geographic)

# Advantages of plastic packaging

- Protects food
- Prolongs shelf life
- eg Cucumber shrink wrapped in Polyethylene- extends life from 3 days to 14 days
- The life of the wrap is a 100 years
- Transparent to see the food
- Light weight
- (https://cen.acs.org/articles)

# Potential better packaging materials

- Chitosan from shrimp and silk protein
- Cellulose (cellophane)
- Leaves and other plant material
- Cups from mushrooms
- Pulp board – plates and spoons
- All forms of compostable material
- Polymers that dissolve in water
- Seaweed
- Edible membranes eg Grape is enclosed by an edible membrane created by nature



# Food packaging and environment

Soil degradation

Forest degradation

Water pollution

Chemical contamination

# Rules and regulations

- Environment Protection Act 1986
- Water conservation and preservation Act 1974, and subsequent amendments
- Air (Prevention and Control of Pollution) Act 1981
- EIA Notification 2006 (Principal rules)
- The National Green Tribunal Act, 2010
- Energy conservation Act 2001

# Rules and regulations 2

- Forest (Conservation) Act, 1980
- Biological Diversity Act 2002,
- Bio-Medical Waste Management Rules, 2016
- Solid Waste Management Rules, 2016
- Construction and Demolition Waste Management Rules, 2016

# Rules and regulations 3

- Plastic Waste Management (Amendment) Rules, 2018
- Hazardous and Other Wastes (Management and Trans boundary Movement) Rules, 2016.
- The Indian Boilers Act 1923
- Insecticide Act 1968 & Rules 1971

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- All regulations under the FSSAI

# State Policies

- Maharashtra Plastic and Thermocol Products notification, 2018
- Maharashtra non- biodegradable garbage (Control) act 2006
- Maharashtra Plastic carry bag rules 2006

# Categories of Industries as per Pollution control Board

- As per Air (Prevention and Control of Pollution) Act 1981 and Water conservation and preservation act 1974, units coming under the “Green”, “Orange” and “Red” category require consent from pollution control board.

# Category Green

- Sector : Packaged Food
- Sub sector Bakery
- Category : < 1 TPD production

- Sector : Grain and Oilseeds
- Sub sector: Flour mills
- Rice Mills
- Veg Oils

# Category Orange

- Bakery > 1TPD
- Snack making using Husk powered Oven
- Non Alcoholic Beverage with waste water < 100 KLD
- Mills with waste water < 100KLD
- Fish processing and packing (excluding chilling of fishes)
- Dairy and dairy products ( small scale)
- Food and food processing including fruits and vegetables processing

# Category RED

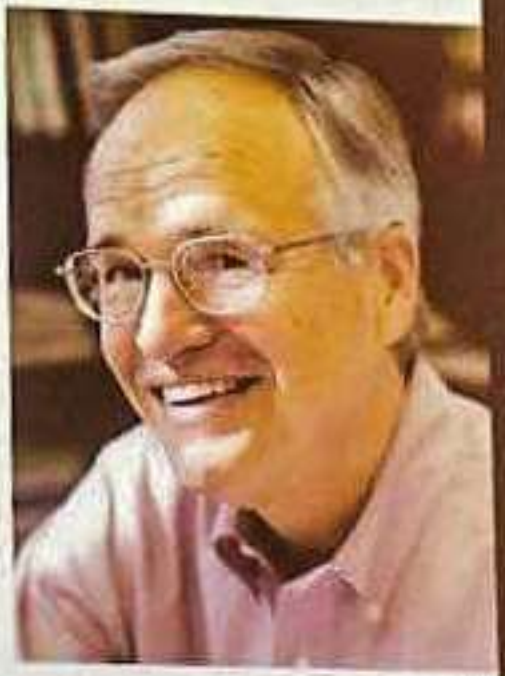
| | |
|---|---|
| Waste | Waste Water > 100KLD |
| Slaughter | Slaughter house and meat processing industries, |
| Milk | Milk processes and dairy products(integrated project) (Large & Medium scale) |

# "We scientists don't know how to do that"

"I used to think the top environmental problems were biodiversity loss, ecosystem collapse and climate change.

I thought that with 30 years of good science we could address those problems.

But I was wrong.
The top environmental problems are selfishness, greed and apathy...



...and to deal with those we need a spiritual and cultural transformation

- and we scientists don't know how to do that."

*Gus Speth*

For your attention

# Thanks