



# OCCUPATIONAL SAFETY

## AMONG MSWM WORKERS

Measures and Impact - Special Reference to COVID 19

**Dr. Vivek Agrawal**

Trustee Secretary CDC

Ex-Chairman, WGCTT, International Solid Waste Association

Chairman, Institute of Chartered Waste Managers





We will cover

Occupational and health risks to MSWM workers  
Reported common injuries and diseases  
Methods and Management

# Hazards in MSWM activities

Collection



Transport



Processing



Disposal

pathogens,  
chemicals, microorganisms, dusts, and toxins such as leachate or stack gases

# Occupational Exposure in MSWM

Heavy workloads

bio-aerosols

volatile compounds

Potentially hazardous or even  
infectious materials

- Indiscriminate use and disposal of protection equipment, masks, gloves, PPE kits etc



# What has changed?

Character of Waste

Behaviour of Producer

Methodology


Disaster Guidelines

Livelihood Opportunities

Fear complex



# Areas of Concern

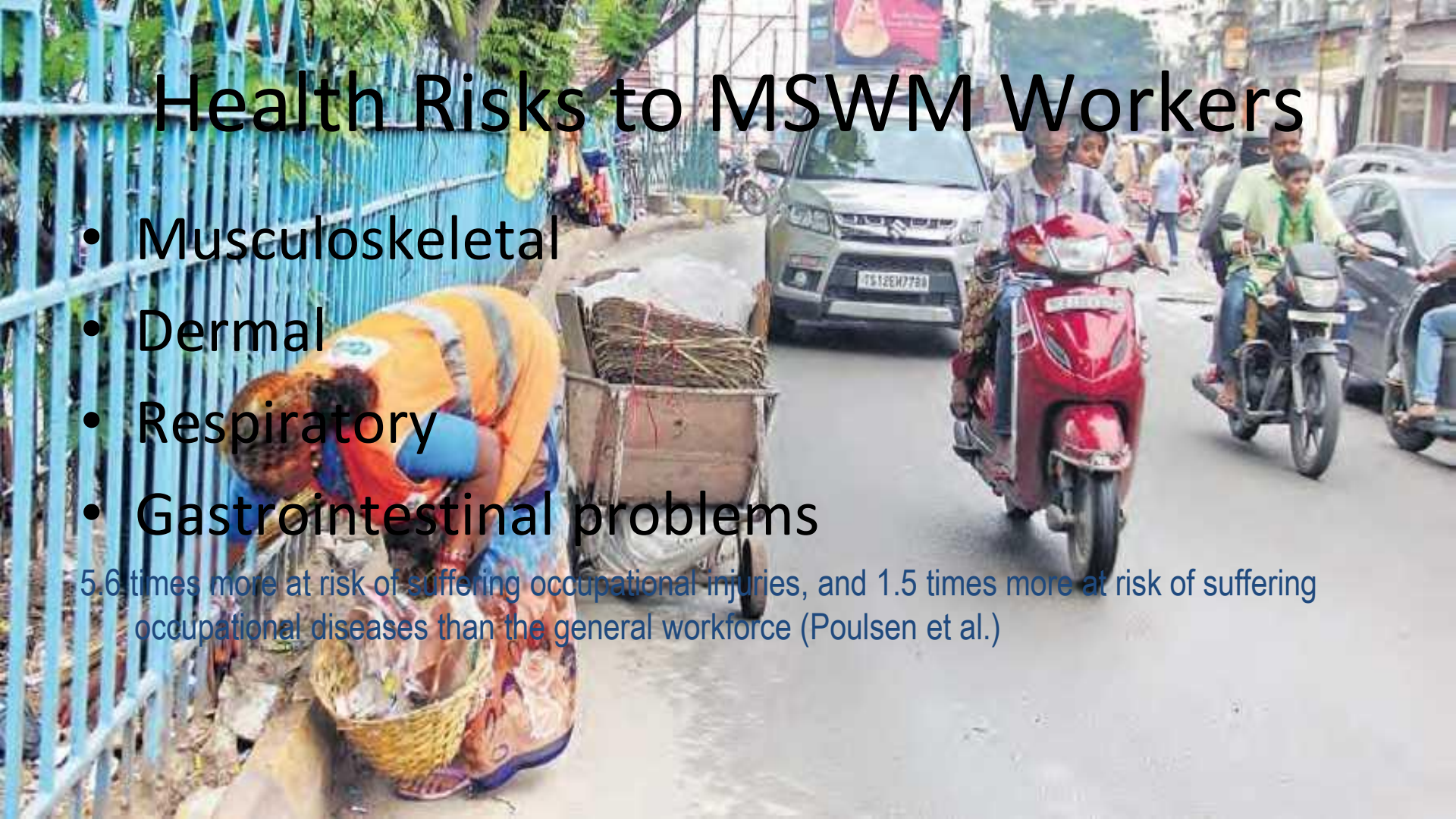
- Safety
  - Contact
  - Climatic Conditions
  - Appropriateness of Safety gears
- 



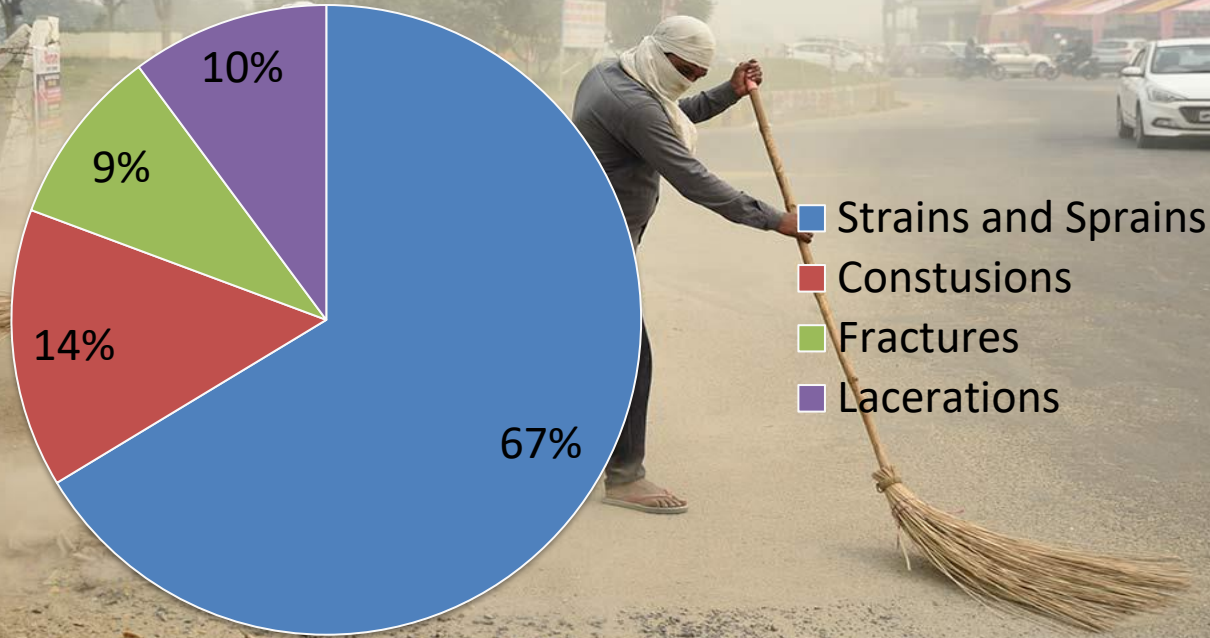
# Health Risks to MSWM Workers

- Musculoskeletal
- Dermal
- Respiratory
- Gastrointestinal problems

5.6 times more at risk of suffering occupational injuries, and 1.5 times more at risk of suffering occupational diseases than the general workforce (Poulsen et al.)

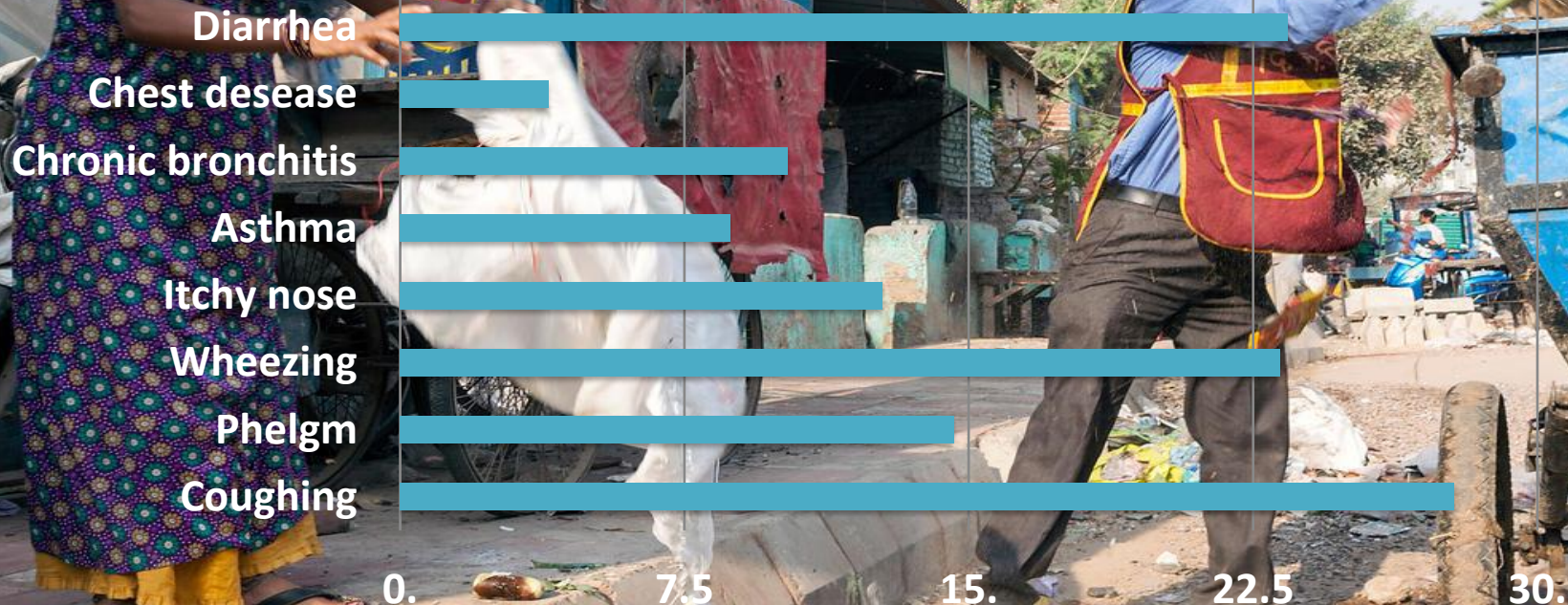


# Major injuries reported





# Common Diseases (Observed)



Random Sample of 100 Indian MSWM workers

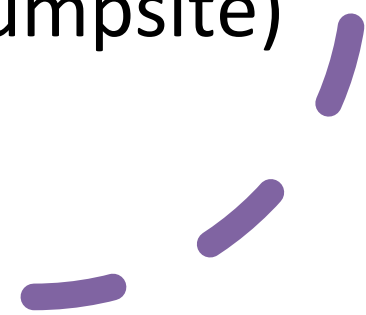




MSWM Occupational Safety

A large red circle on the left side of the slide, partially cut off by the edge.

## Safety Gears and Sanitisation

- Collection and Transportation
  - MRF
  - Processing
  - Disposal (Landfill/Dumpsite)
- 
- Three purple curved lines of varying lengths and orientations, located in the bottom right corner of the slide.

# Personal Protective Equipment

Lab coat



Coveralls

Ear muffs



Vibration-absorbing gloves



Hard hat



Safety glasses



Mask



Safety boots/shoes



Chemical-proof gloves





# Managing Occupation Health and Safety

Training

Equipment and clothing for personal protection

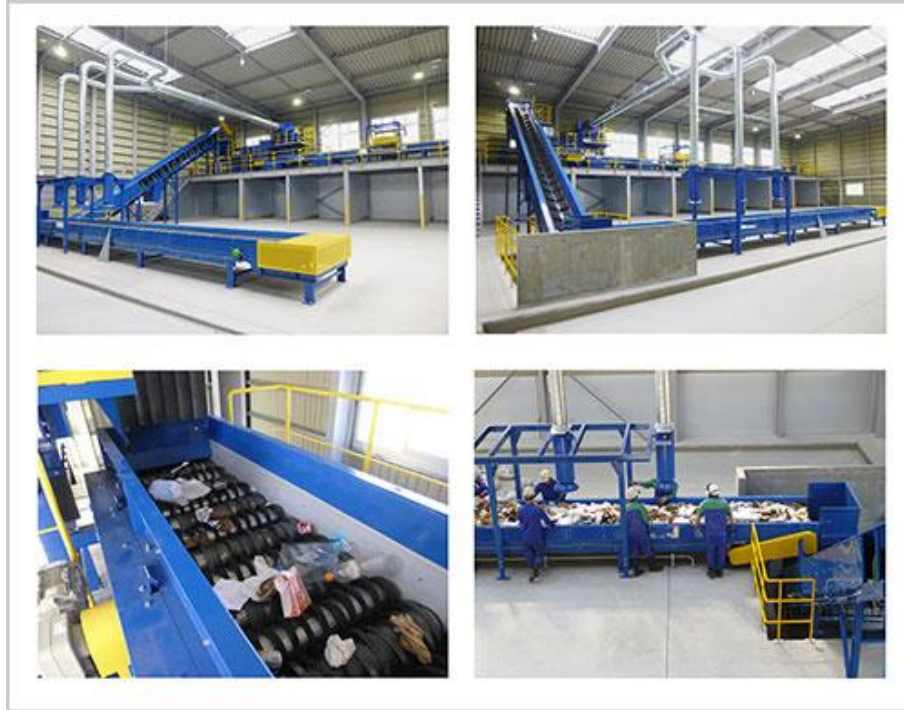
Effective occupational health programme

- includes immunization, post-exposure prophylactic treatment, and medical surveillance

# Innovative Collection Vehicles



# Automatic Segregation and Processing Machines



# Landfill Equipment





# How to Mitigate?



LESS HUMAN  
INTERFACE



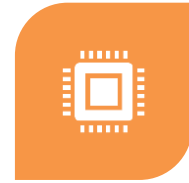
MORE  
SEGREGATION AT  
SOURCE



APPROPRIATE  
SAFETY GEARS



CUSTOMISED  
METHODOLOGY



USE OF  
TECHNOLOGY

Thank You



16, Shri Gopal Nagar, Gopalpura  
Bypass, Behind Mahesh Nagar  
Police Station, Jaipur 302015  
INDIA

E: [vivek.Agrawal@cdcindia.org](mailto:vivek.Agrawal@cdcindia.org)

M: +91 97993 94501

W: [www.cdcindia.org](http://www.cdcindia.org)