



**Malaysian Rubber Glove Manufacturers Association**

# **Potential Areas of Research in the Rubber Glove Industry**

***MRC Industry Linkage Fund : Industry-University Interaction Session***

***12<sup>th</sup> Sept 2022***



**Malaysian Rubber Glove Manufacturers Association**

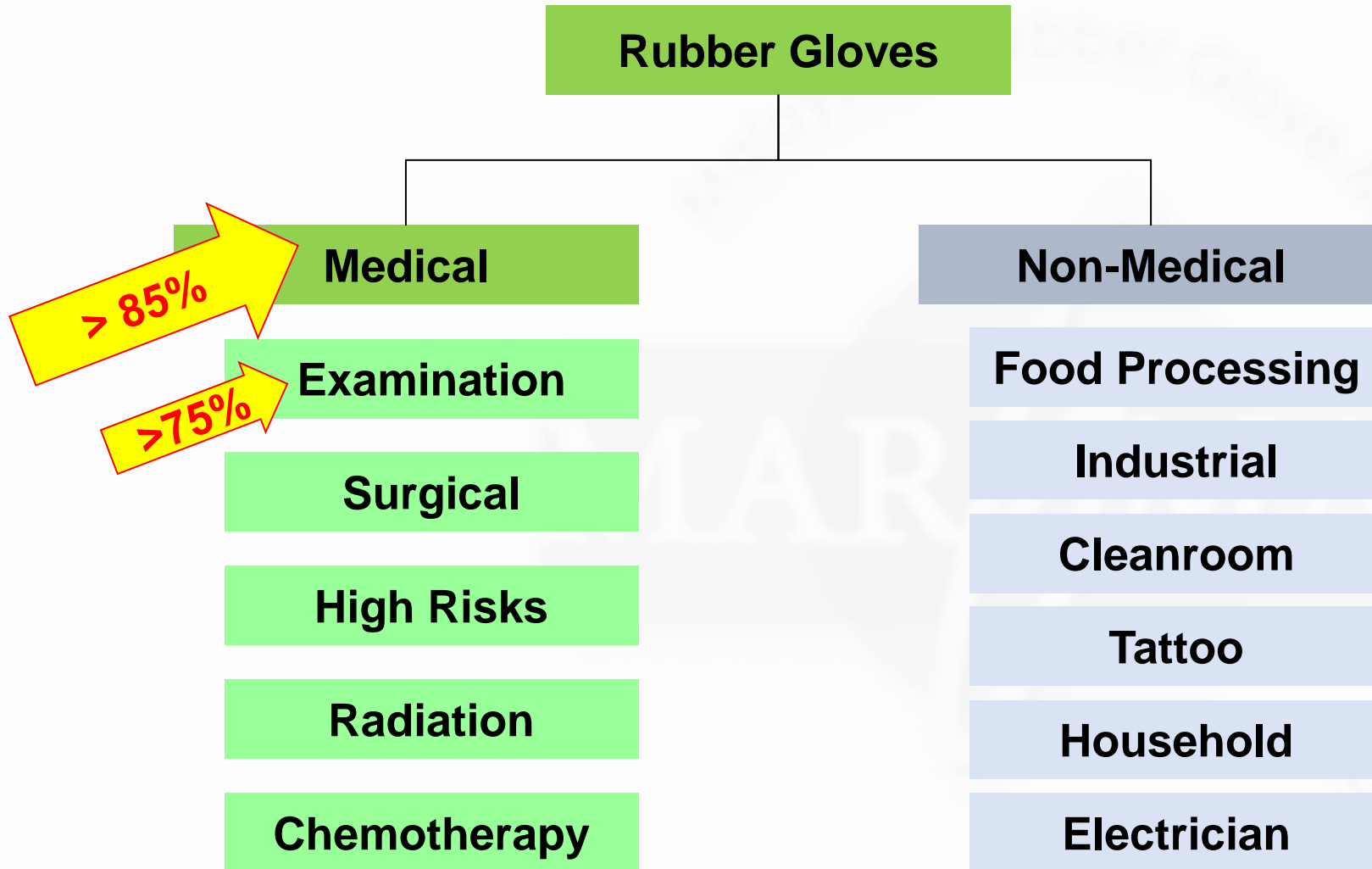
# **Introduction to Rubber Products**



# Malaysian Rubber Glove Manufacturers Association

## Rubber Gloves Categories

# Categorize by Applications



# Categorize by Materials

## Rubber Gloves

### Natural

One-Third

Hevea Brasiliensis



R&D On-going

Guayule



Kazakh Dandelion



Eucommia ulmoides (杜仲)



...and other plant sources of rubber.

### Synthetic

Two-Thirds

Nitrile (NBR)

Cast Polyethylene (CPE)

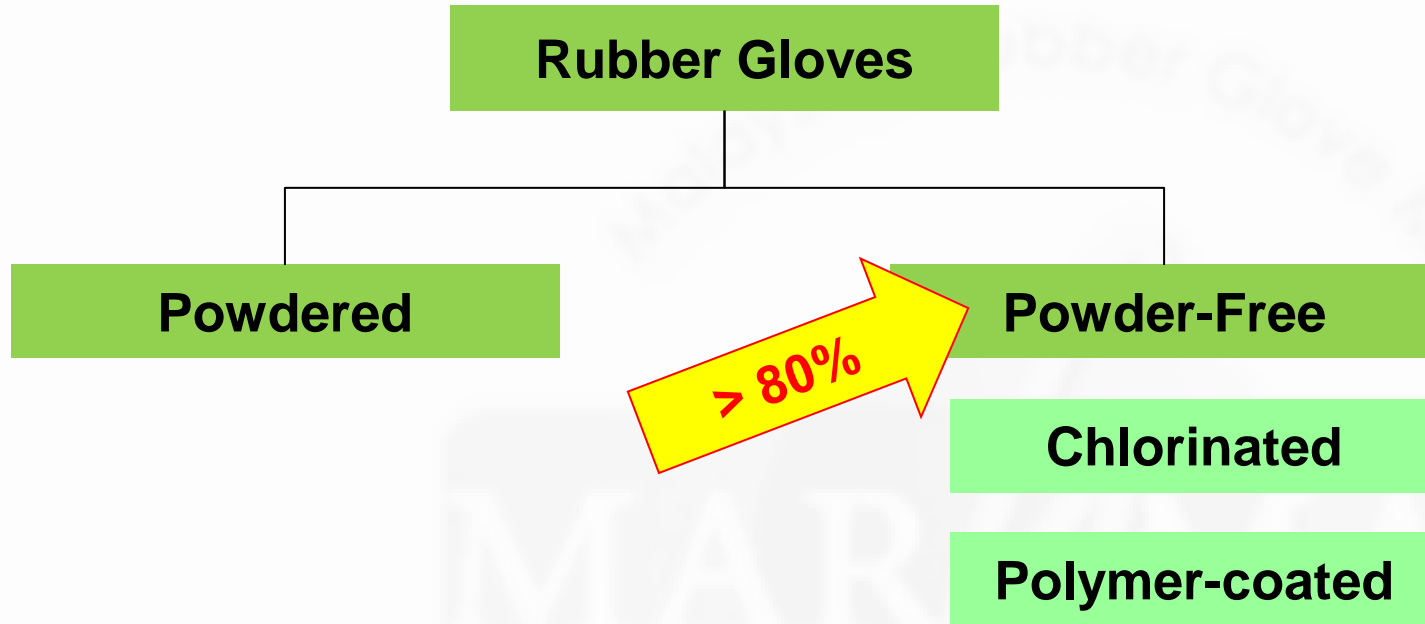
Vinyl (PVC)

Neoprene

Polyisoprene

Polyurethane

# Categorize by Processes



**Length**

**Multiple-Dipping**

**Blended**

**Moisturizer coated**

**Aloe vera coated**

**Anti-microbial**



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## The Big Picture

# Malaysia is the **World's Number One** Rubber Gloves Producing Nation

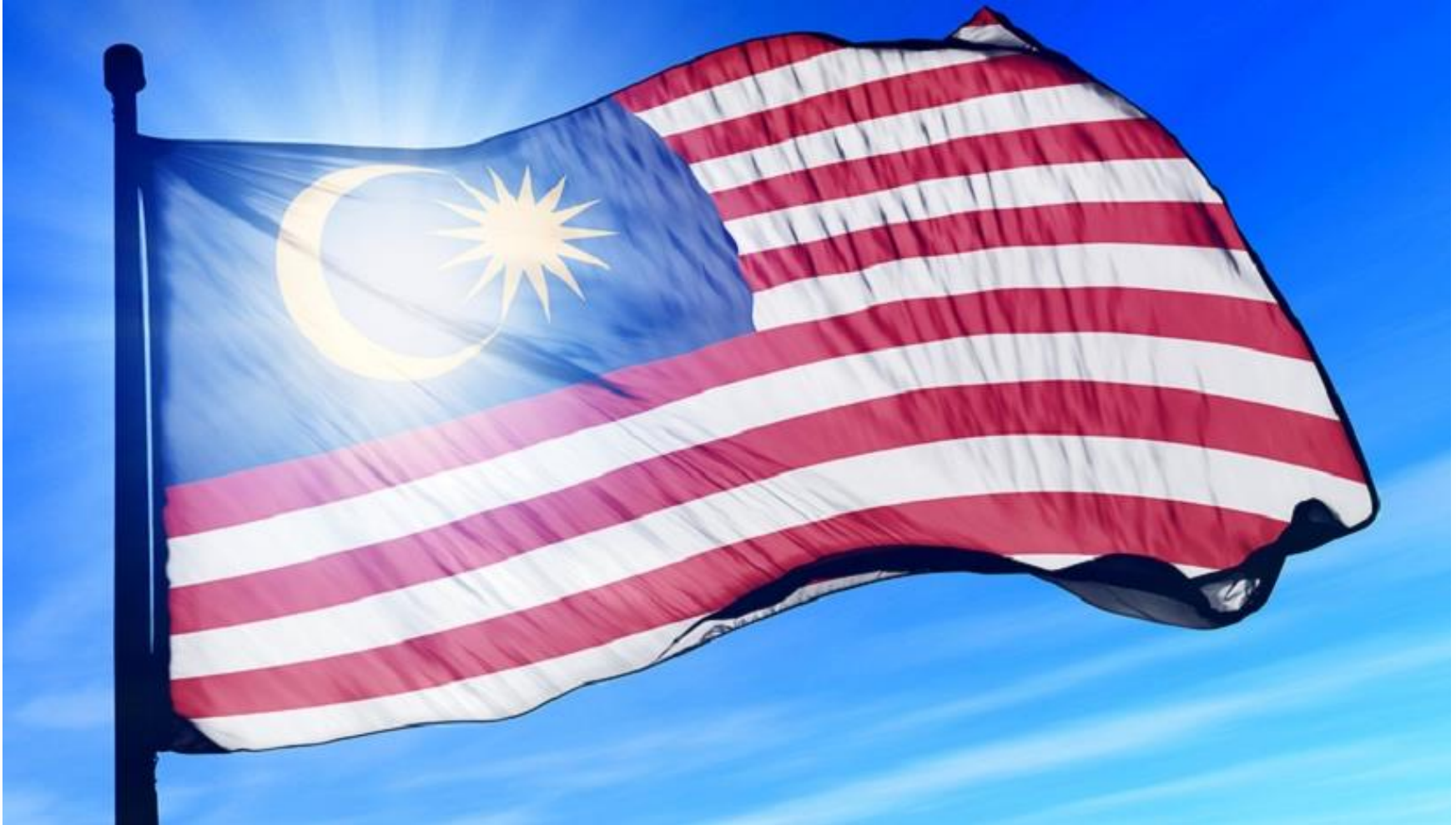


Image credit: <http://www.therakyatpost.com/>



# The Managed Growth

The industry has grown aggressively in the past 25 years and Malaysian companies had developed the technologies required to build state of the art manufacturing facilities with advanced automation in the 2010s.



Modern Factory in 2010s

- **Passion**
- **Determination**
- **Entrepreneurial Spirit**

had nurtured our growth for more than three decades.

# Projection for 2022

**REVISED** Estimated Global Demand:

**399,000,000,000**

(399 billion gloves)

*(12,622 gloves used every second)*

Expected Y-o-Y annual growth:

**10% to 12%**

Projected Malaysian  
Export Revenue:

**RM23.6 bil**

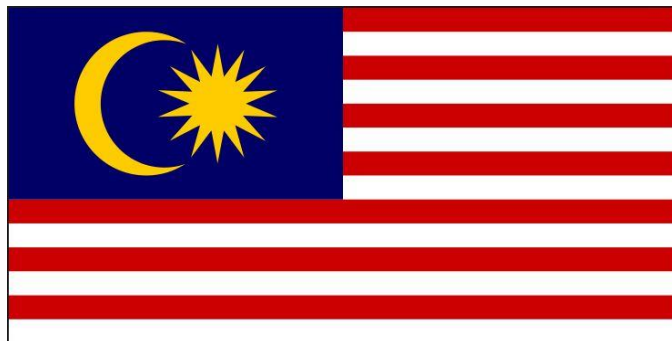


# Global Market Share

(**REVISED** estimation for year 2022)



Global Demand estimated at **399 billion gloves for 2022**



65%

Estimated **259 billion gloves** will be produced by Malaysia



China

20%



Thailand

10%



Indonesia

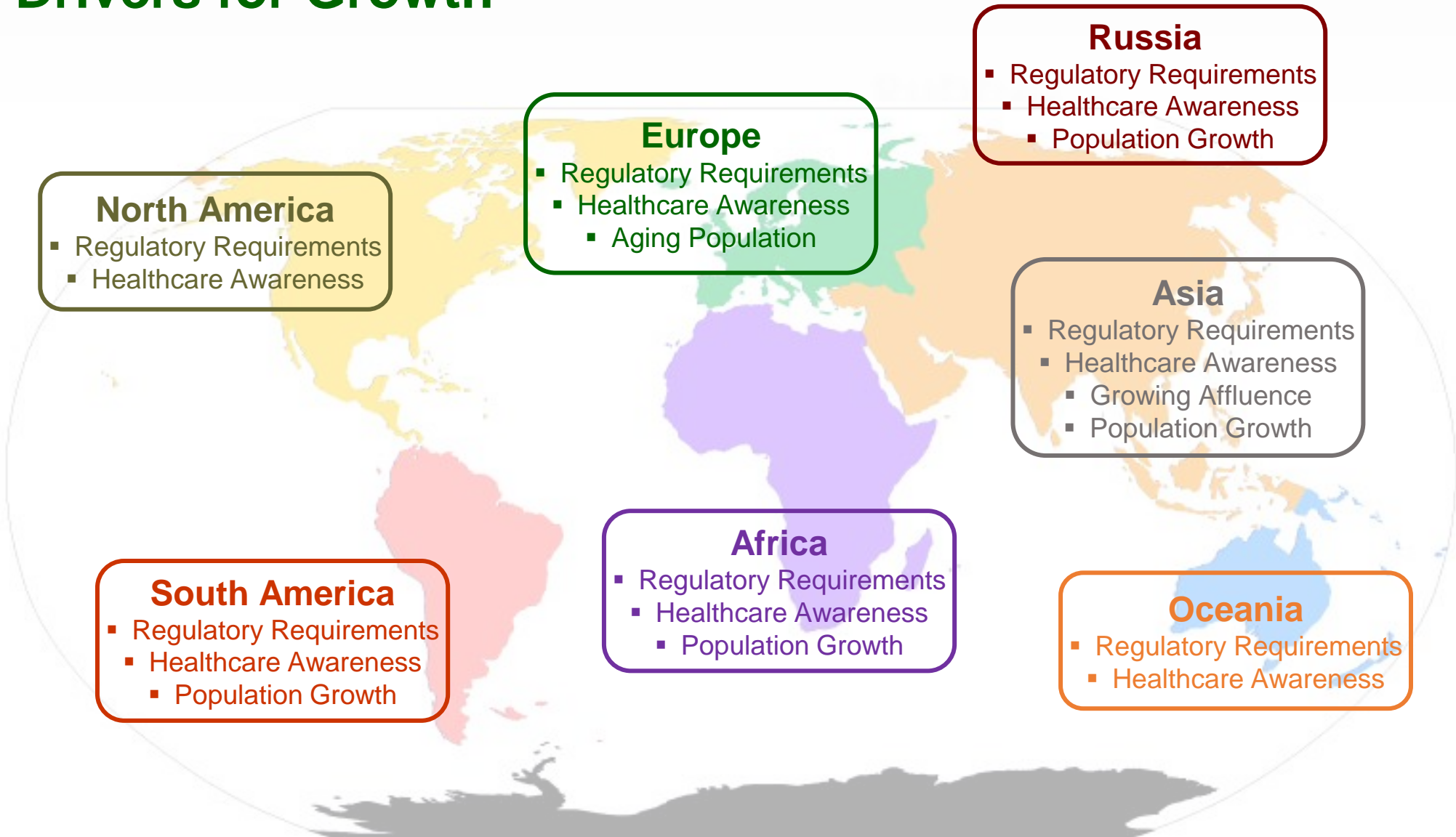
3%

There could be as many as **200 rubber glove manufacturers worldwide.**

Last **REVISED** on 2 Aug 2022

(Estimated market share.)

# Drivers for Growth



# Ever Increasing Applications for Rubber Gloves



- **Medical & Dental**

Original and major market segment

- Pharmaceutical & Laboratory

- Food Industry – Processing & Service

- Electronics – Clean Room

- Industrial – Janitorial/Mechanical

- Tattooing procedures

- Household

- Specialized medical applications



# Key Sustenance for Growth



Product Innovation

R & D

Automation

Engineering

Harnessing New Energy Sources

Recycling of Waste Water



Photo credit: <https://www.pinterest.com/explore/solar-thermal-systems/>



Photo credit: <http://www.chfourenergy.com/>





# THE WAY FORWARD.....



- **Continuous R&D**
- **COSTS management**
- **ESG as a USP**



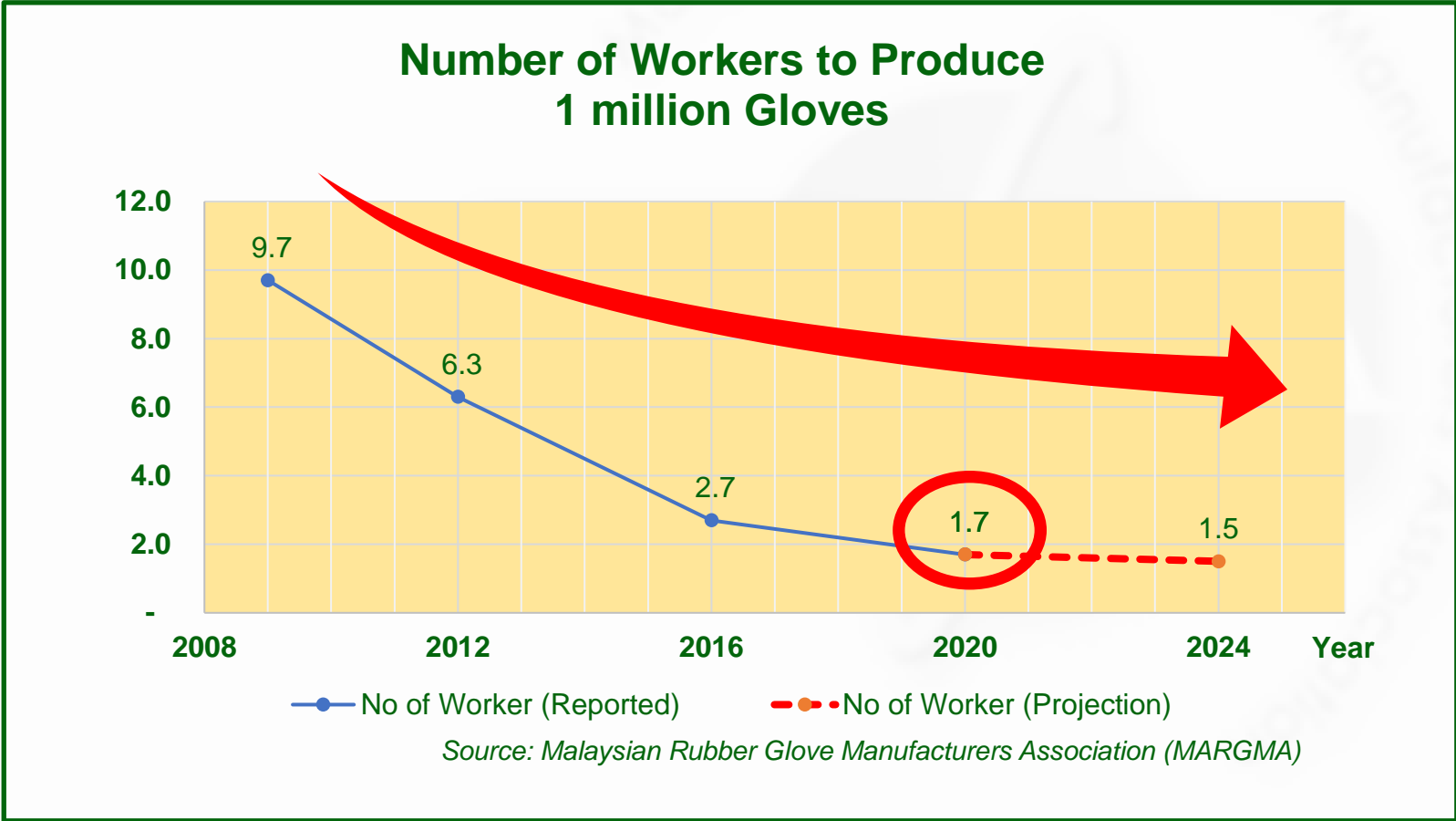


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# **Technology Advancement in the Rubber Glove Industry**

# Increased Productivity in Gloves Manufacturing

Modernization and automation lead to quantum leaps in productivity in some of the **MOST ADVANCED** factories.



# Advancement in Glove Production Technology

**1992**

Malaysian Built Lines produce 6,000 gloves/hour

**2007**

Further improvement resulting in 30,000 gloves/hour

**3,000**

**1988**

**1988**

Imported lines from Taiwan produce about 3,000 gloves/hour

**6,000**

**1992**

**2002**

Major Innovation using double formers resulting in production of 20,000 gloves/hour

**20,000**

**2002**

**30,000**

**2007**

**2010**

Improved speed to 36,000 gloves/hour

**36,000**

**2010**

**2013**

Achieved breakthrough speed between 42,000 and 45,000 gloves/hour

**42,000 to 45,000**

**2013**



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## Key Focus Areas for R&D

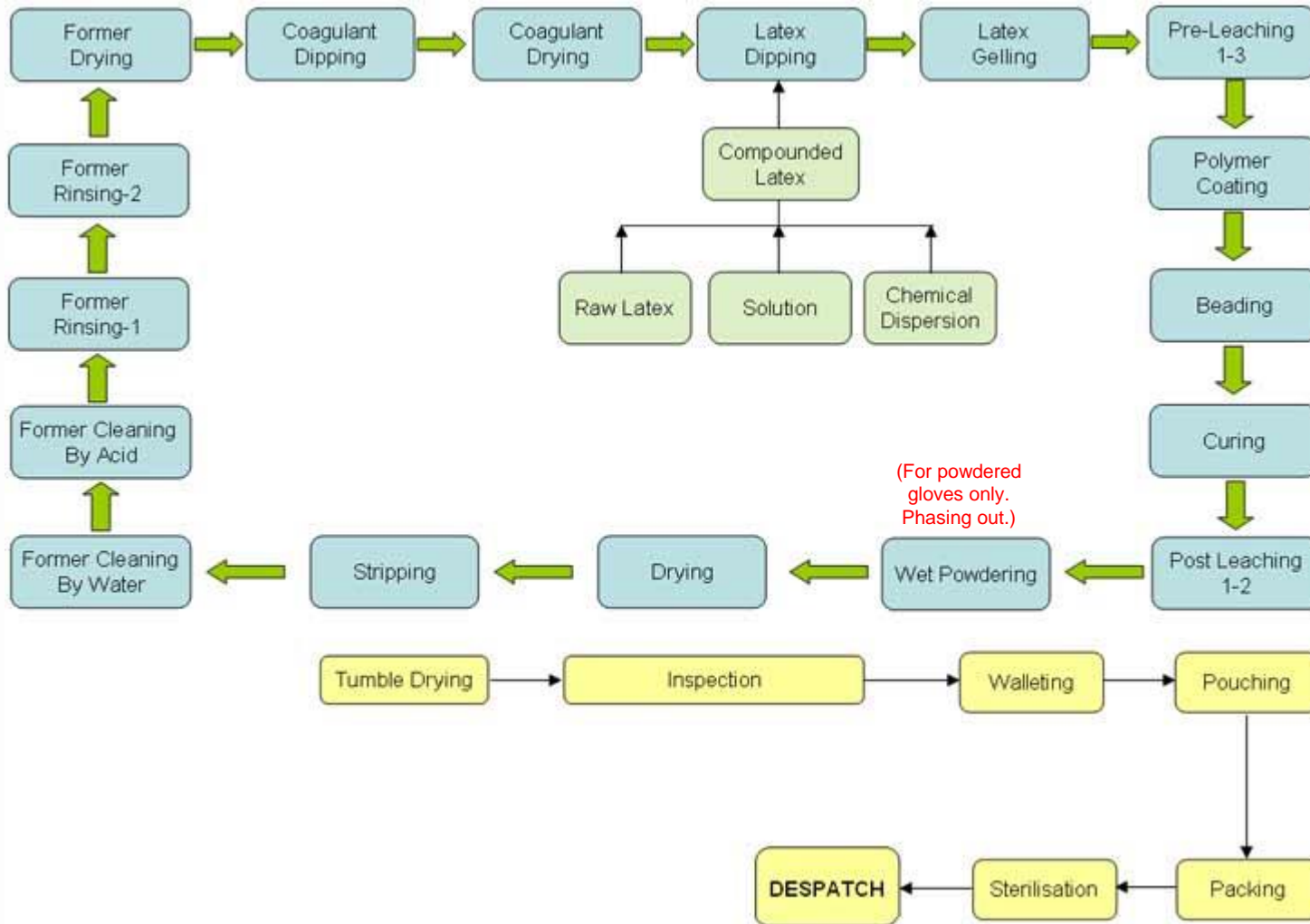
## Our R&D Mantras

- It must fulfil an industrial need
- It must be commercially viable
- Brilliant if its innovative
- Enhances the wellness of mankind
- Adds to the body of knowledge leading to a desirable end result.



Graphics credit: <http://www.feron-tech.com/rd/>

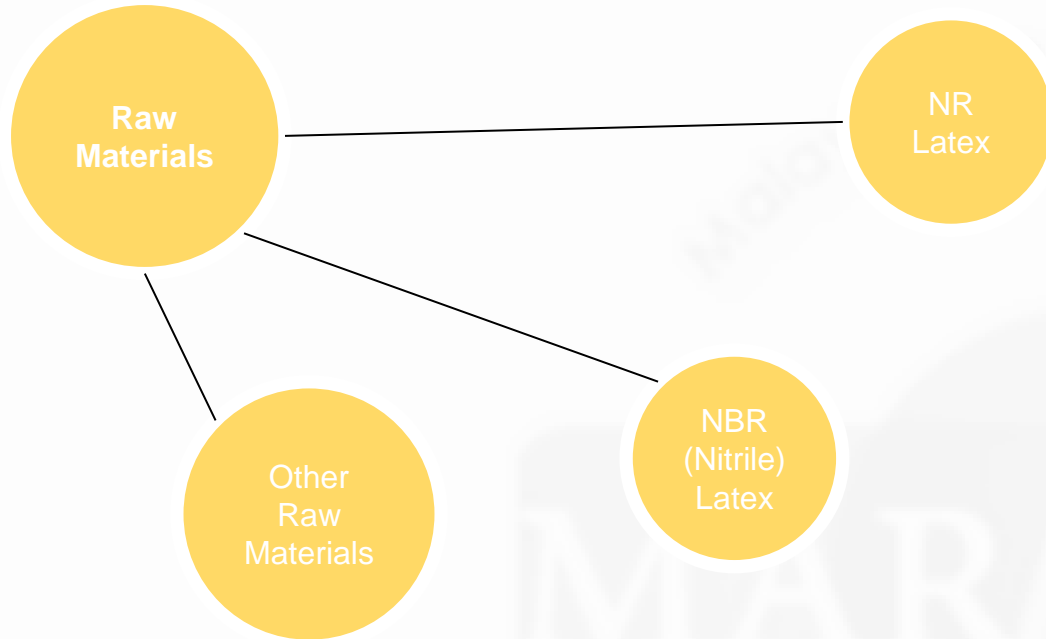
# Schematic Diagram of Dipping Process



# Key Focus Areas for R&D



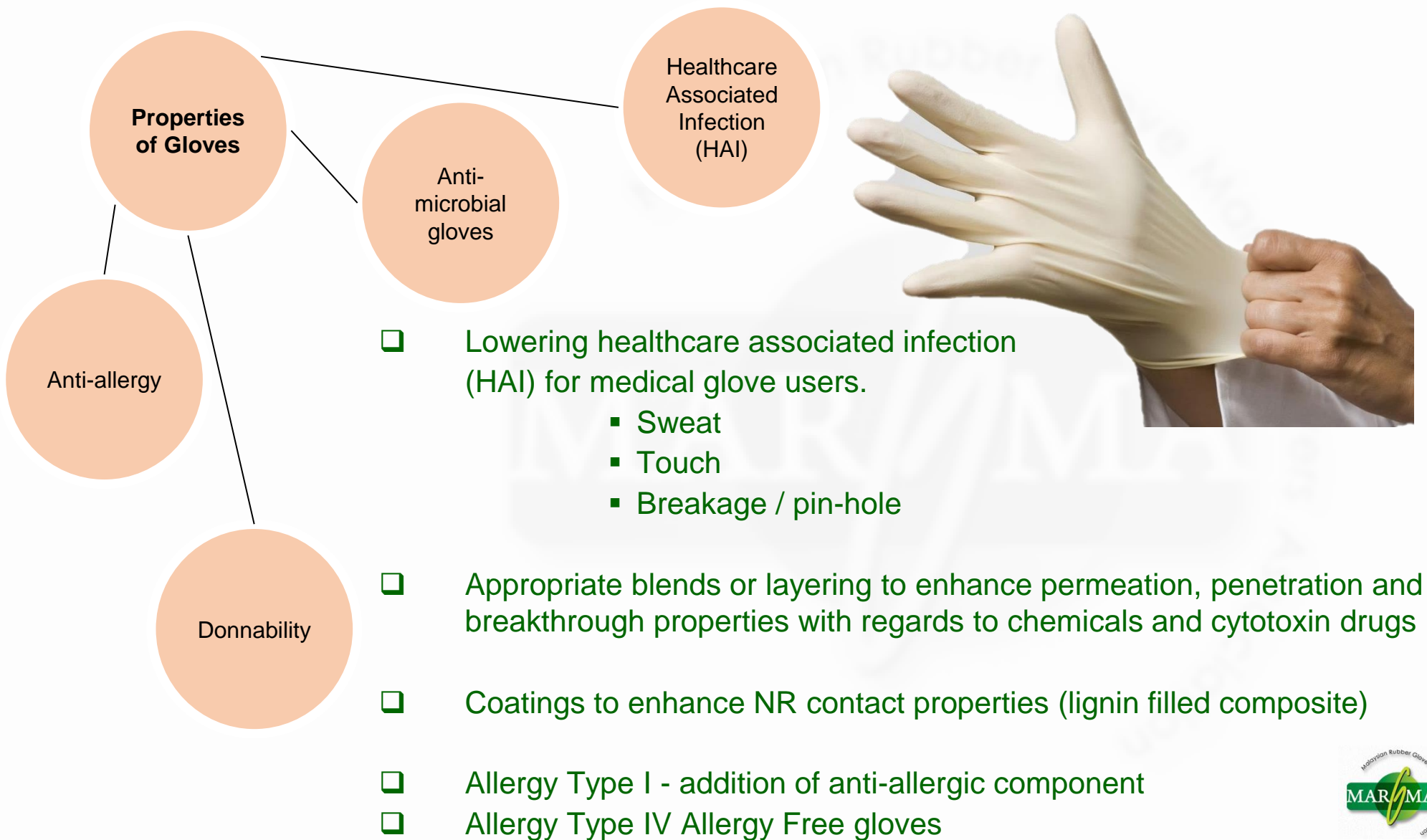
# R&D on Raw Materials



- ❑ Ability to produce a thinner glove (NR), yet fulfilling all the desirable quality requirements.
- ❑ Bio-based raw materials
- ❑ Thinner & Lighter Gloves
- ❑ Raw materials ....biodegradable, green



# R&D ON GLOVE PROPERTIES



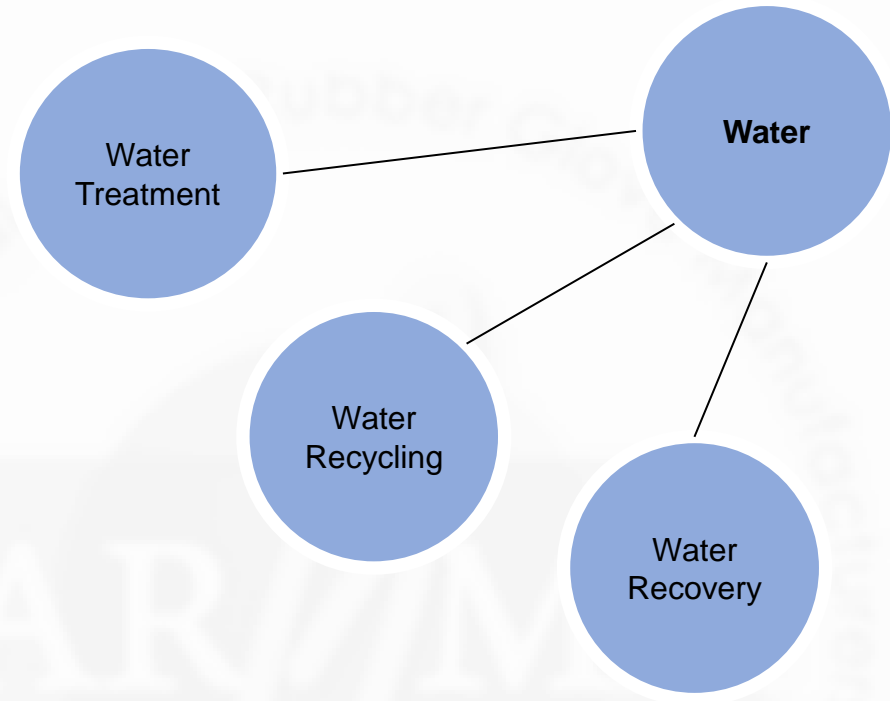
# The Industry uses plenty of water



Photo credit: <http://www.chfourenergy.com/>



Photo credit: <http://www.wwf.org.my/>



- ❑ Treatment of river water as alternative to water supply
- ❑ Waste water treatment
- ❑ Recycling water

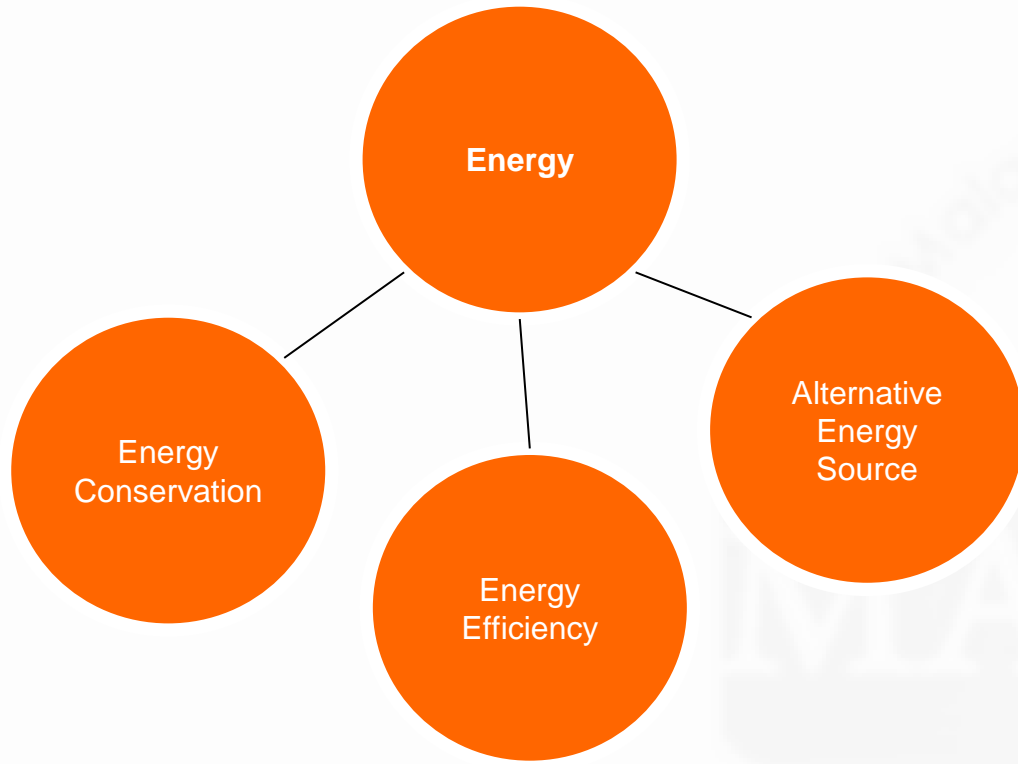
# Socially responsible .....13,300 pcs/sec

- ❑ Biodegradability of glove materials
- ❑ Treatment of affluent
- ❑ Solid waste treatment / reclaim process



Photo credit: <https://www.videoblocks.com/>

# Energy constitutes 11% of our costs .....Gas, Electricity



- ❑ Energy accounting for 11% of total glove production cost; alternative cheaper sources of energy are needed.
- ❑ Better Insulation of oven to reduce energy loss
- ❑ Better energy efficiency for oven



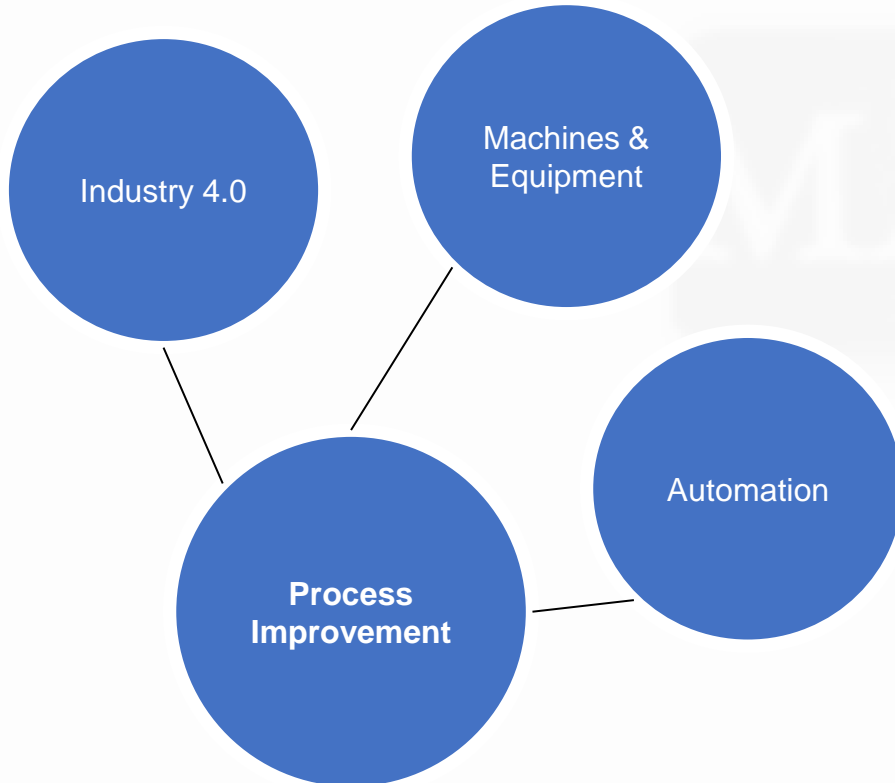
Photo credit: <https://cqhdkj.en.alibaba.com/>



Photo credit: <https://www.pinterest.com/explore/solar-thermal-systems/>

# Automation, Robotics, Industry 4.0 .....

- ❑ Increase automation, hence, reduces manual labour
- ❑ Defects detection and its elimination
- ❑ Industrial 4.0



Graphics credit: <https://www.primapower.com/us/industry-4-0/>

# To make Malaysia a global hub for Gloves.....

MARKET INTELLIGENCE!



International Rubber Glove Conference and Exhibition



Constant seminars and updates for glove players

Being up the curve on R & D. 5 to 10 ahead!



Standards & Conformance ISO, EN ASEAN..... ASTM



Going green , sustainable



Constantly managing ESG globally



# Thank you!

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