Unsustainable Idol Immersion In Kolkata, India

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GPS: The World's Water
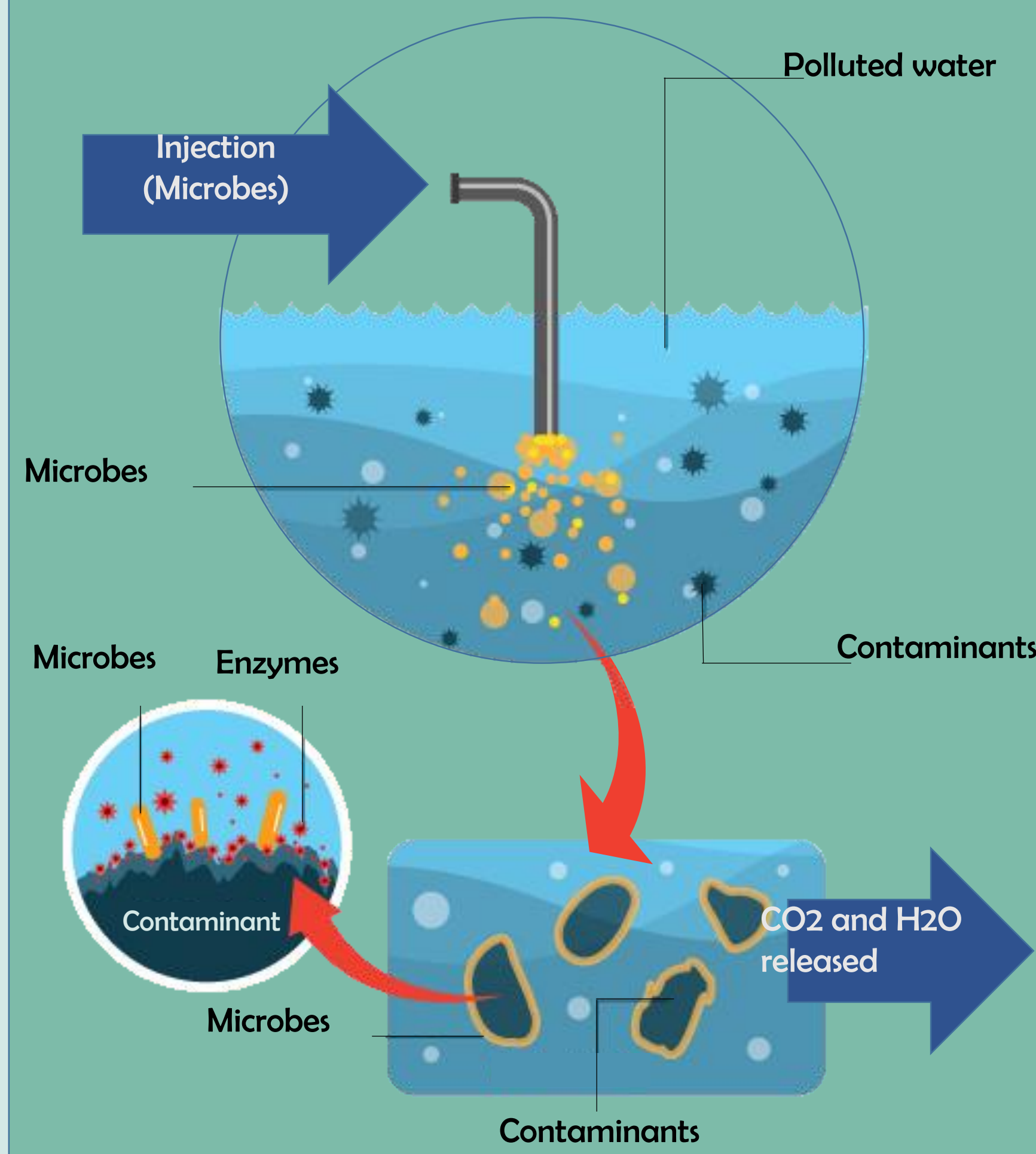Professor Derren Rosbach, Professor Elisabeth Stoddard, William Roe, Sarah Butts

Direct Approach
Bioremediation and Alternative Materials

Bioremediation introduces microbes that degrade heavy metals such as lead and mercury. Bioremediation can reduce toxins by 10% each month. Also sugar cane husks, coconut shells, and spices are biodegradable alternatives.

Goal:
Decrease heavy metal concentration and amount of non-biodegradable materials polluting Ganges due to Idol Immersion

Over 500,000 idols are immersed in the Ganges each year. Specifically in Kolkata, 10,000 were immersed during the 10 day festival, Durga Puja. Post immersion, this leads to increased levels of lead and mercury and a 27% drop in dissolved oxygen levels in the water.

Meet Kavana
An autonomous research probe that can monitor progress of the Ganges and can stream video of the river during festivals to the public.

Indirect Approach
Education and Awareness

Contaminants in Idols

On the first day of the Durga Festival in 2015, 52% of the 128,620 submerged idols were made of Plaster of Paris (PoP).

The Ganges river is sacred in Hinduism. With awareness campaigns and public education, sustainable practices can be standardized.

Group	Campaign
Future Generation	Public Education
General Population	Advertising
Wealthy and International	Social Media Stream

1986
Ganga Action Plan founded

2018
- Unite NGOs to propose changes to action plan
- Allocate bioremediation sites
- Expand government budget to NGO education programs

2019
- Pass legislation to restrict harmful materials used in idols
- Start bioremediation process at allocated sites
- Start awareness campaigns

2020
- Test effectiveness of bioremediation and relocate sites to increase efficiency
- Enforce use of eco-friendly materials

2021+
- Continue bioremediation until water has safe heavy metal concentration
- Ensure practices are sustainable and enforced