



# High Altitude Pathogens

[Source: NYT](#)

## Why in News?

Recently, studies over **Japan** at altitudes up to 10,000 feet, have found different **bacteria** and **fungi** types in the air, **which could be the cause of Kawasaki diseases.**

- Scientists have been studying **airborne microbes** since the 1920s, capturing **spores** and other biological particles floating in the atmosphere.

## What are the Key Facts about the Study?

- **Air Sampling Over Japan:** Researchers conducted flights to collect **airborne particles** over the **Sea of Japan**, focusing on **air masses** from China.
  - The samples contained a rare mineral called **hafnium**, likely originating from Chinese mines.
  - Northeastern China could be a significant source of airborne pathogens due to extensive farming, **livestock** operations, and **soil erosion.**
- **Connection to Kawasaki Disease:** The study was inspired by research linked to **Kawasaki disease.**
  - It was observed that Kawasaki disease cases in Japan increased when winds blew from **northeast China**. This suggests that winds may transport **pathogens** or other elements that contribute to the disease.

## Hafnium

- Hafnium is a **good absorber of neutrons** and is used in the **control rods of nuclear reactors.**
- Hafnium is also used in **vacuum tubes** as a **getter**, a material that combines with and removes trace gases from vacuum tubes.
- Hafnium has been used as an **alloying agent** in iron, titanium, niobium and other metals.

## What is Kawasaki Disease?

- **About:** Kawasaki disease, or Kawasaki syndrome, is an **inflammation**, in the walls of **blood vessels** that carry blood throughout the body.
  - The inflamed blood vessels increases the risk of tearing or narrowing, **limiting blood flow** to tissues and organs.
- **Prevalence:** It primarily affects children aged **6 months to 5 years.**
  - It occurs in about **10 to 20 per 100,000 children** under 5 in the US and Canada, while in Japan, Korea, and Taiwan, it affects **50 to 250 per 100,000 children** under 5.
- **Causes:** The exact cause of Kawasaki disease is unknown, but it is suspected to be linked to **bacterial or viral infection**, environmental factors, or genetics.

## UPSC Civil Services Examination, Previous Year Question (PYQ)

### Prelims

**Q. Consider the following kinds of organisms: (2012)**

1. Bacteria
2. Fungi
3. Flowering plants

**Some species of which of the above kinds of organisms are employed as biopesticides?**

- (a) 1 only  
(b) 2 and 3 only  
(c) 1 and 3 only  
(d) 1, 2 and 3

**Ans: (d)**

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