



Impact of national ban of highly hazardous pesticides on mortality from suicide by pesticide in Nepal

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Centre for
PESTICIDE SUICIDE
PREVENTION



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Background

14 million deaths since the Green Revolution

150,000 deaths every year

For every **one death** there are **20 attempts**

Most cases of pesticide self-poisoning occur in **low and middle-income countries** where people have **easy access to lethal pesticides**

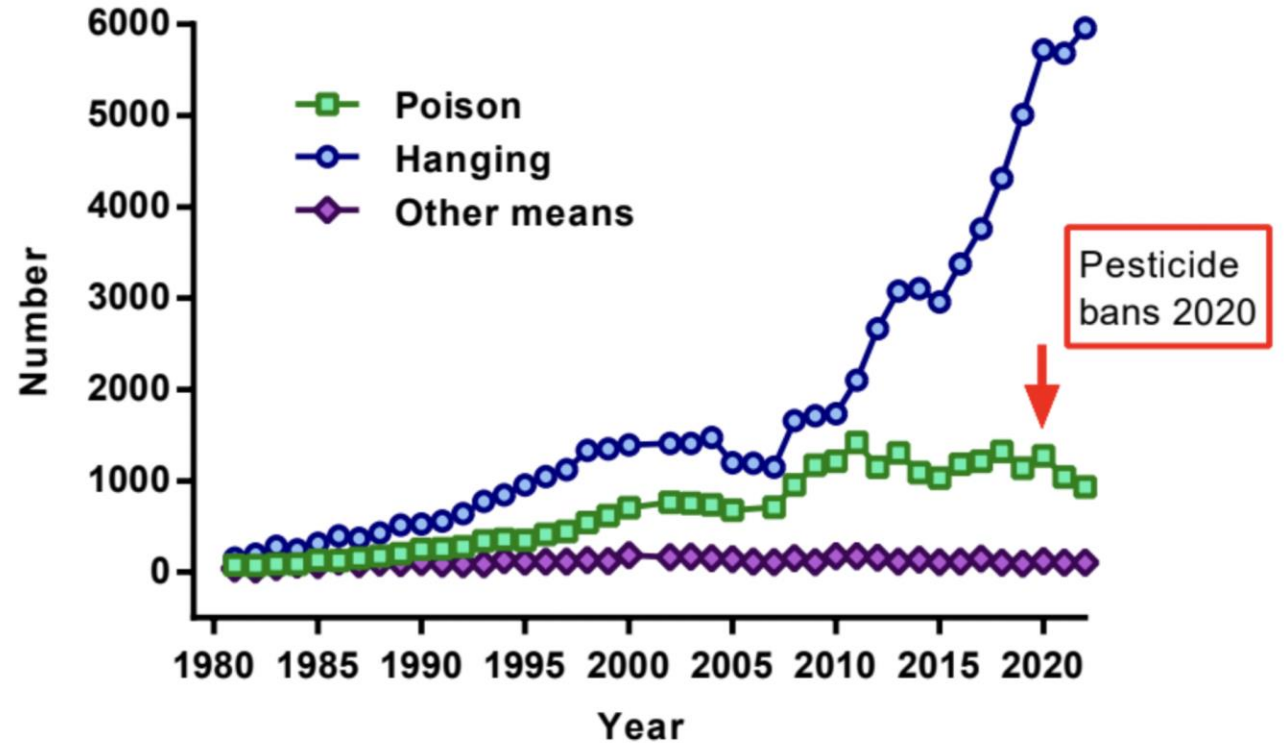


The Problem: Nepal

6993 deaths from suicide in 2022-2023

Almost similar (6830) from the year before

18-20% of deaths due to poisoning

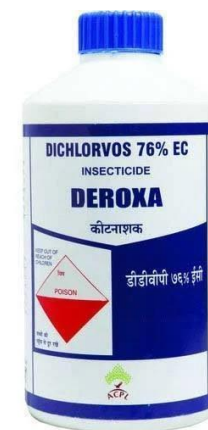


Suicide numbers in Nepal 1980-2022 (Source: Nepal Police)

Poisoning is **second most common method of suicide** in Nepal after hanging
Most cases of poisoning were due to **pesticide self-poisoning**

Rationale of the study

- Banning highly hazardous pesticides (HHPs) is a cost-effective intervention to reduce mortality from pesticide suicide
- **24** pesticides were banned in Nepal (2001-2019)
 - **8** pesticides were banned in August, 2019
- The objective of the study is to monitor the **impact of the ban** on **pesticide suicide numbers** and **the agriculture yields**



Eddleston M. Banning toxic pesticides is effective at preventing suicides in South

Asia *BMJ* 2023; 382 :p1838 doi:10.1136/bmj.p1838

<http://www.npponeal.gov.np/downloadsdetail/2/2018/39799637/> List of banned pesticides in Nepal

Data

- Autopsy data from **September 2021 to January 2024** from the National Forensic Science Laboratory and Central Police Forensic Science Laboratories (Kathmandu, Dharan and Nepalgunj)
- The findings were compared to data from an earlier study (HOPE GRID Apr.2017- July 2019) to see the change over the time in pesticide suicide cases and active ingredients involved
- Data on agriculture yields were collected from publications of Ministry of Agriculture and Livestock Development (July 2005 -July 2022)
- Ethical approval obtained from Nepal Health Research Council, Government of Nepal

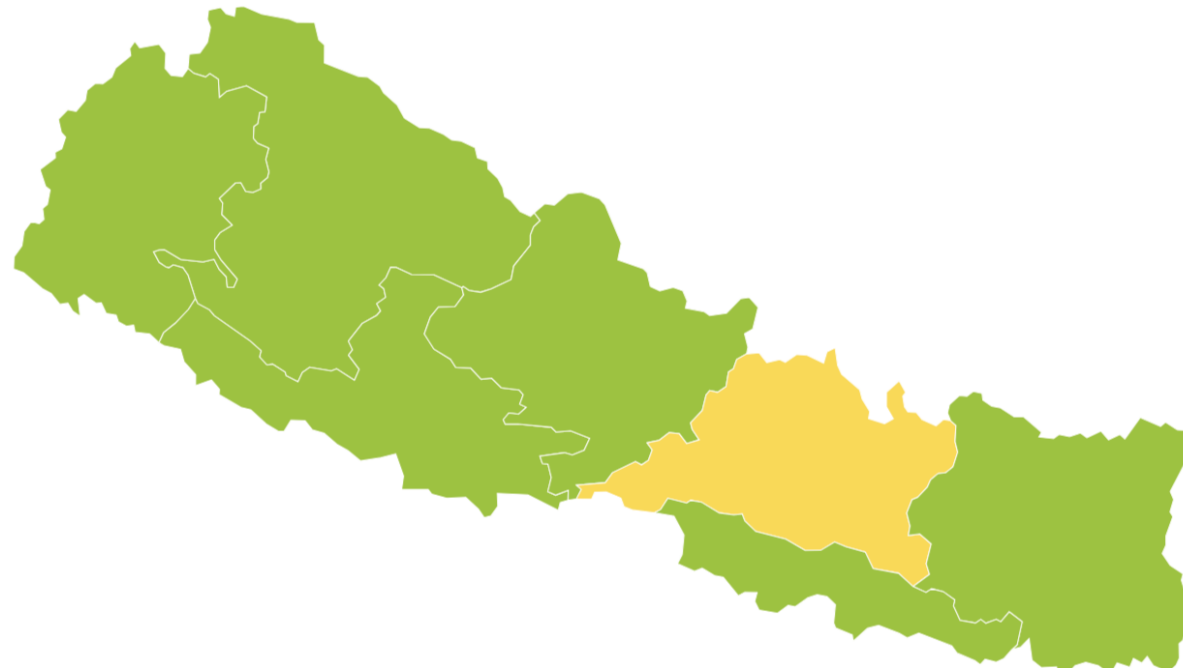
Analysis

- Descriptive analysis calculating frequency statistics.
- The data on demographics and pesticide responsible for suicide was identified from laboratory analysis record file for September 2021- January 2024 data



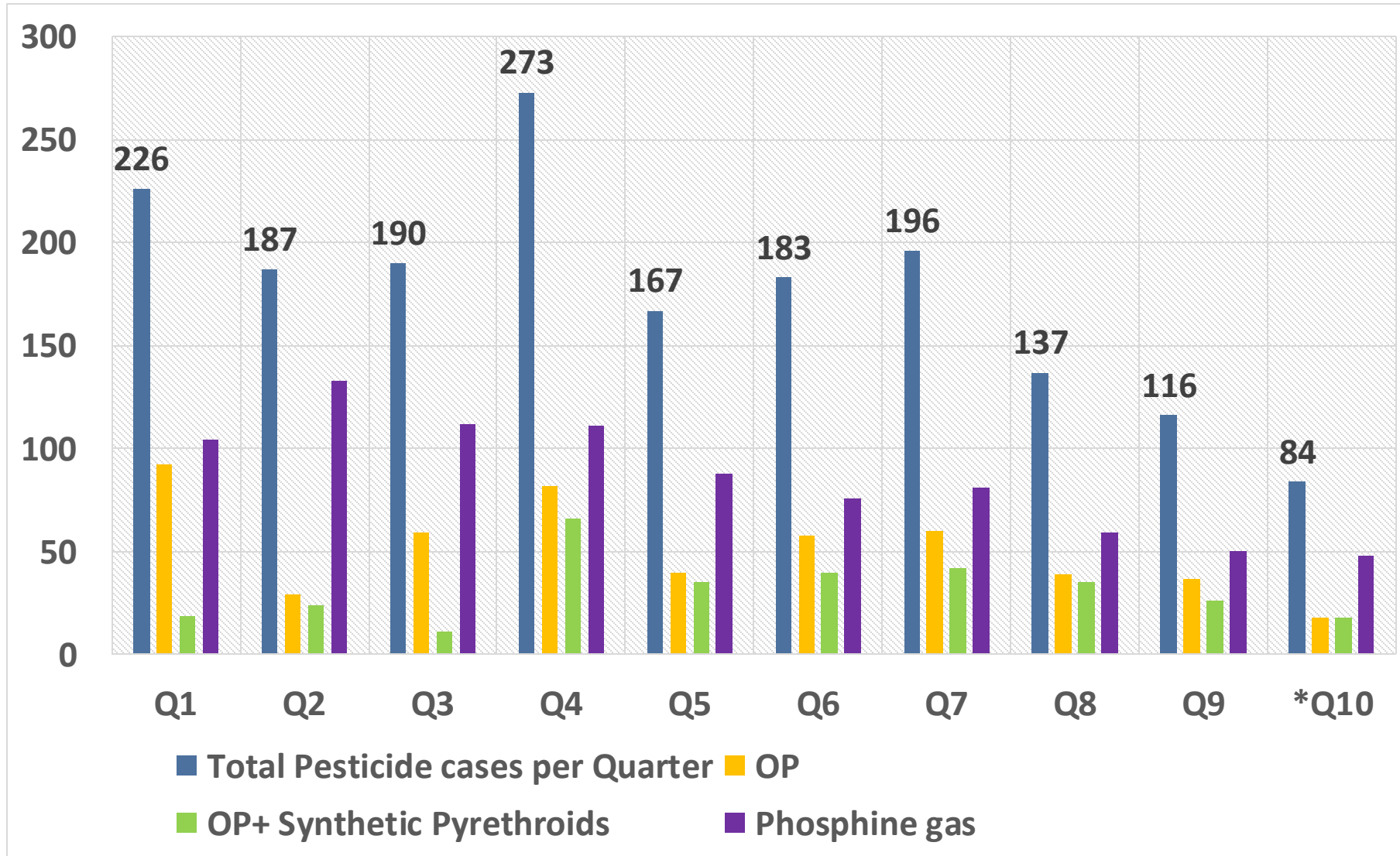
Overall findings – 2021-24 data

- 1,764 pesticide suicides reported by toxicology laboratories
 - 51.3 % were males
 - Mean age was 38.9 ± 17.43 with 33.7% between age 16-30 years
 - Geographical differences with highest number of cases in Bagmati Province (25.3%)



Pesticide groups – 2021-24 data

By Quarters



Q1= Sept 2021-Nov 2021

Q2= Dec 2021-Feb 2022

Q3= Mar 2022- May2022

Q4= Jun 2022-Aug 2022

Q5= Sept 2022-Nov 2022

Q6= Dec 2022-Feb 2023

Q7= Mar 2023-May 2023

Q8= Jun 2023-Aug 2023

Q9= Sept 2023-Nov 2023

*Q10=Dec 2023-Jan 2024

Active Ingredients– 2021-24 data

Forensic Lab data analysis by Quarters

Total
pesticide
deaths

Aluminium
Phosphide

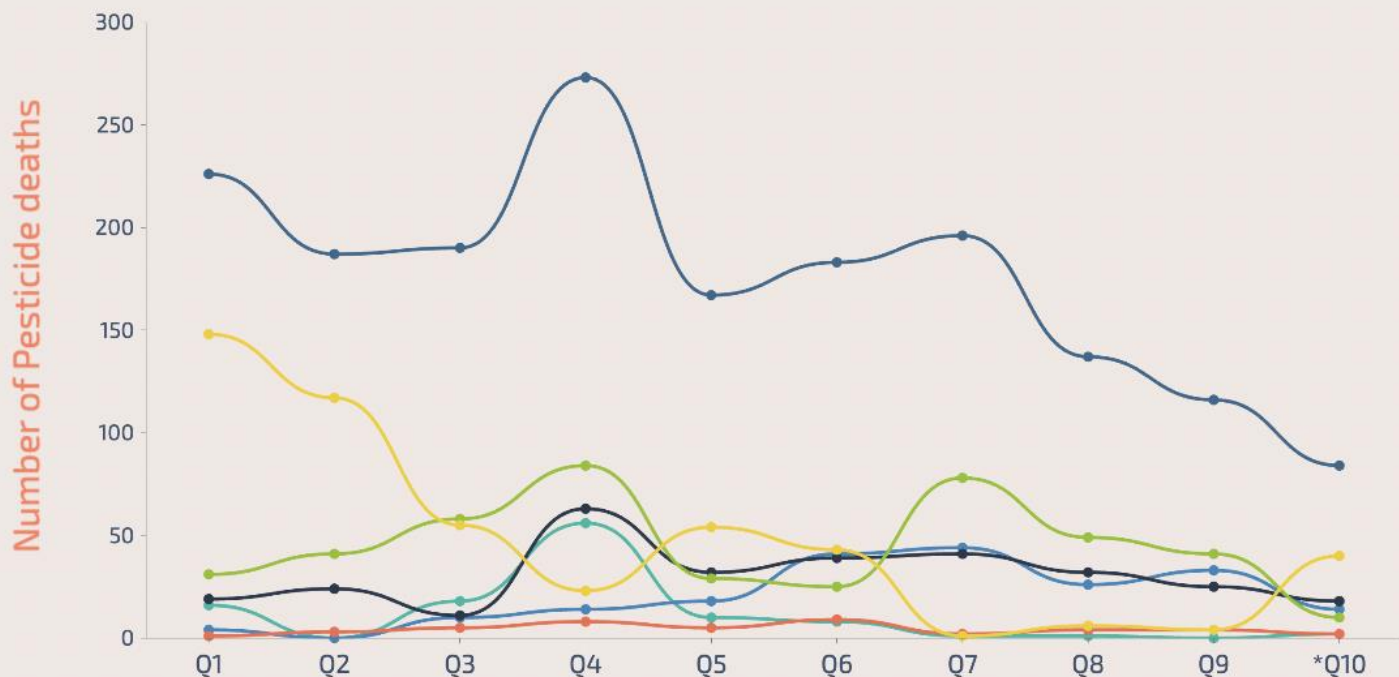
Chlorpyrifos+
Cypermethrin

Dichlorvos

Chlorpyrifos

Zinc
Phosphide

Not identified



Q1- Sept-Nov,2021

Q2-Dec,2021-Feb.2022

Q3-Mar-May,2022

Q4-Jun-Aug,2022

Q5-Sep-Nov,2022

Q6-Dec, 2022-Feb.2023

Q7- Mar -May,2023

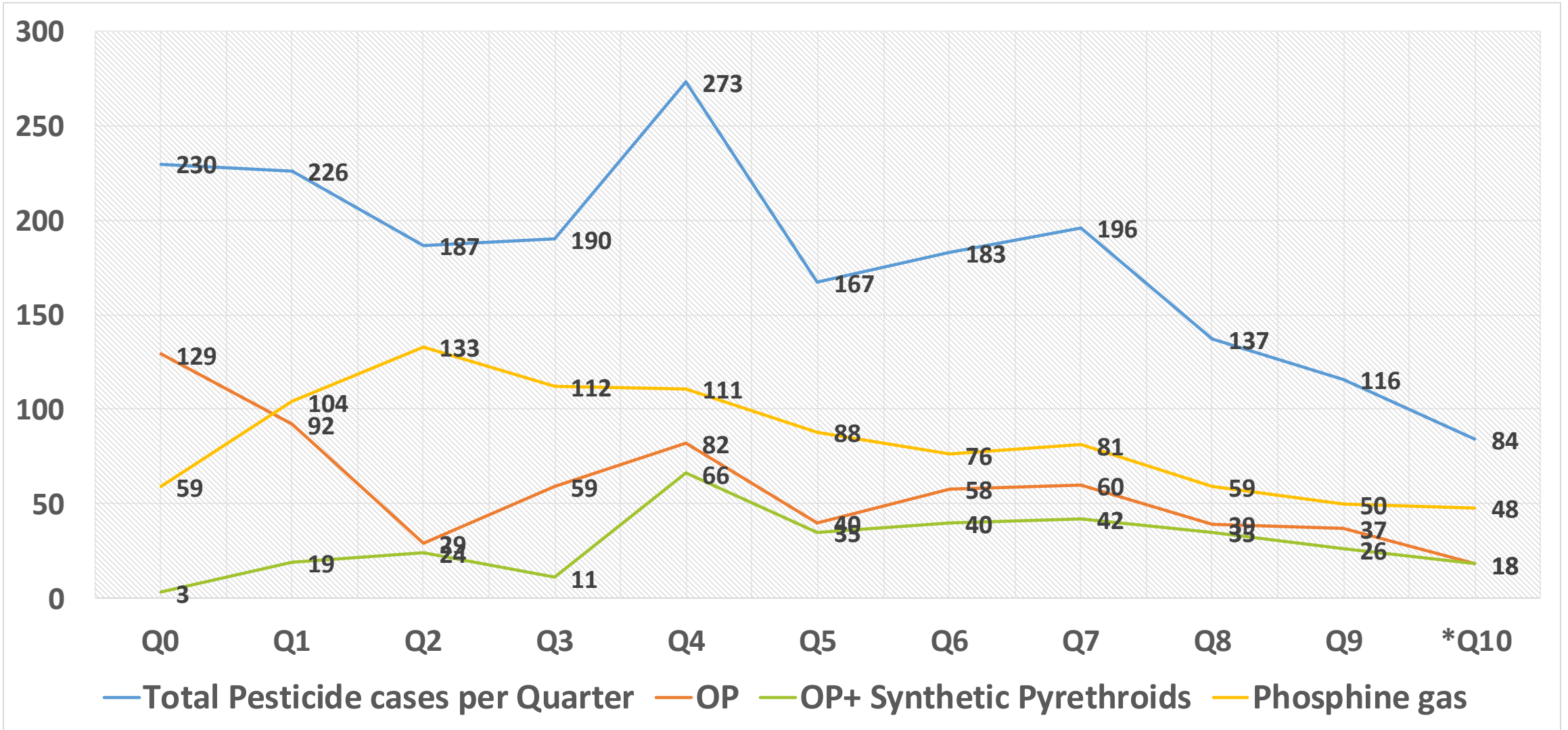
Q8-Jun-Aug,2023

Q9-Sep-Nov, 2023

Q10-Dec,2023-Jan,
2024 (Only 2 months)

Pesticide groups – Preban (2017- 2019) and Post ban (2021- 2023)

By Quarters

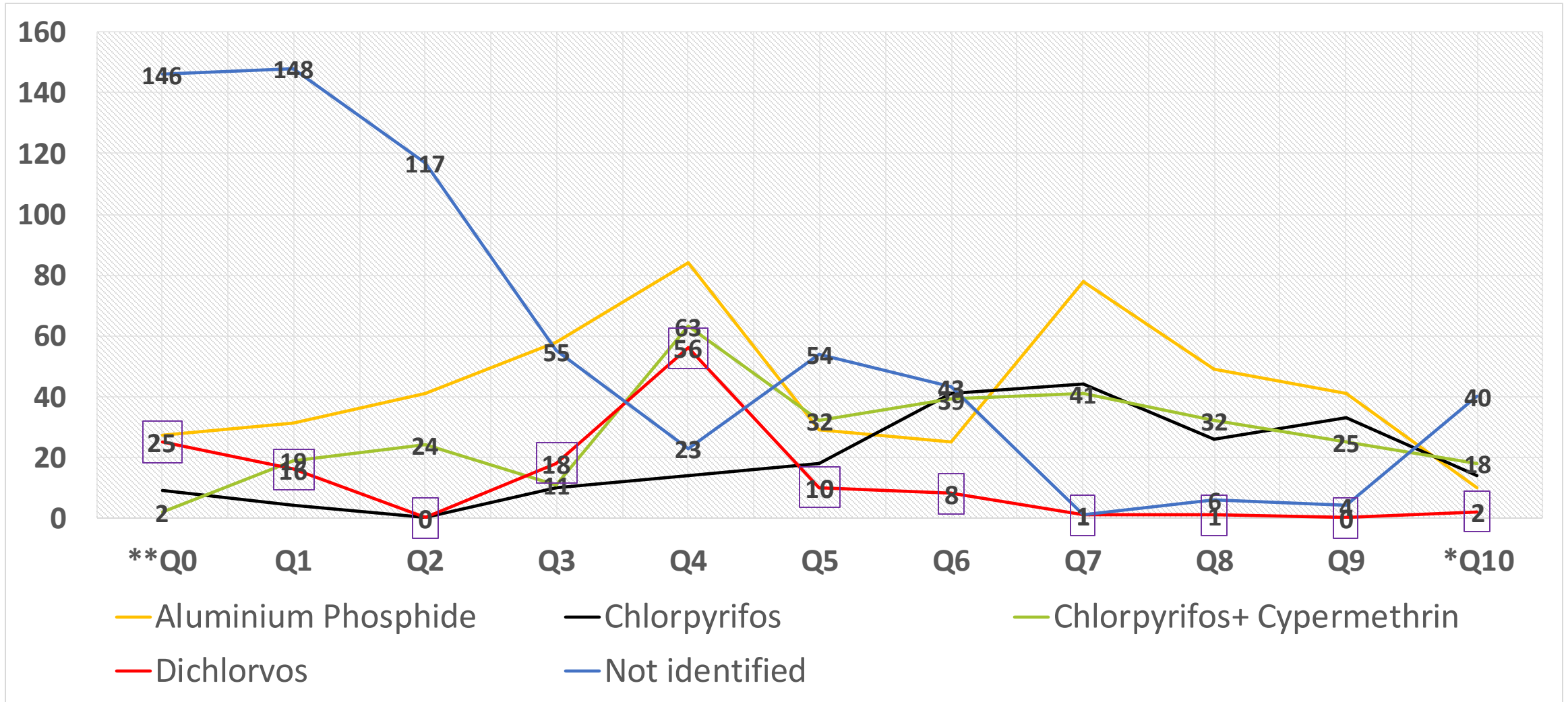


**Q0= Represents each Quarter of Preban period

*Q10- Only 2 months (Dec-Jan)

Active Ingredients– Preban (2017-2019) and Post ban data (2021-2023)

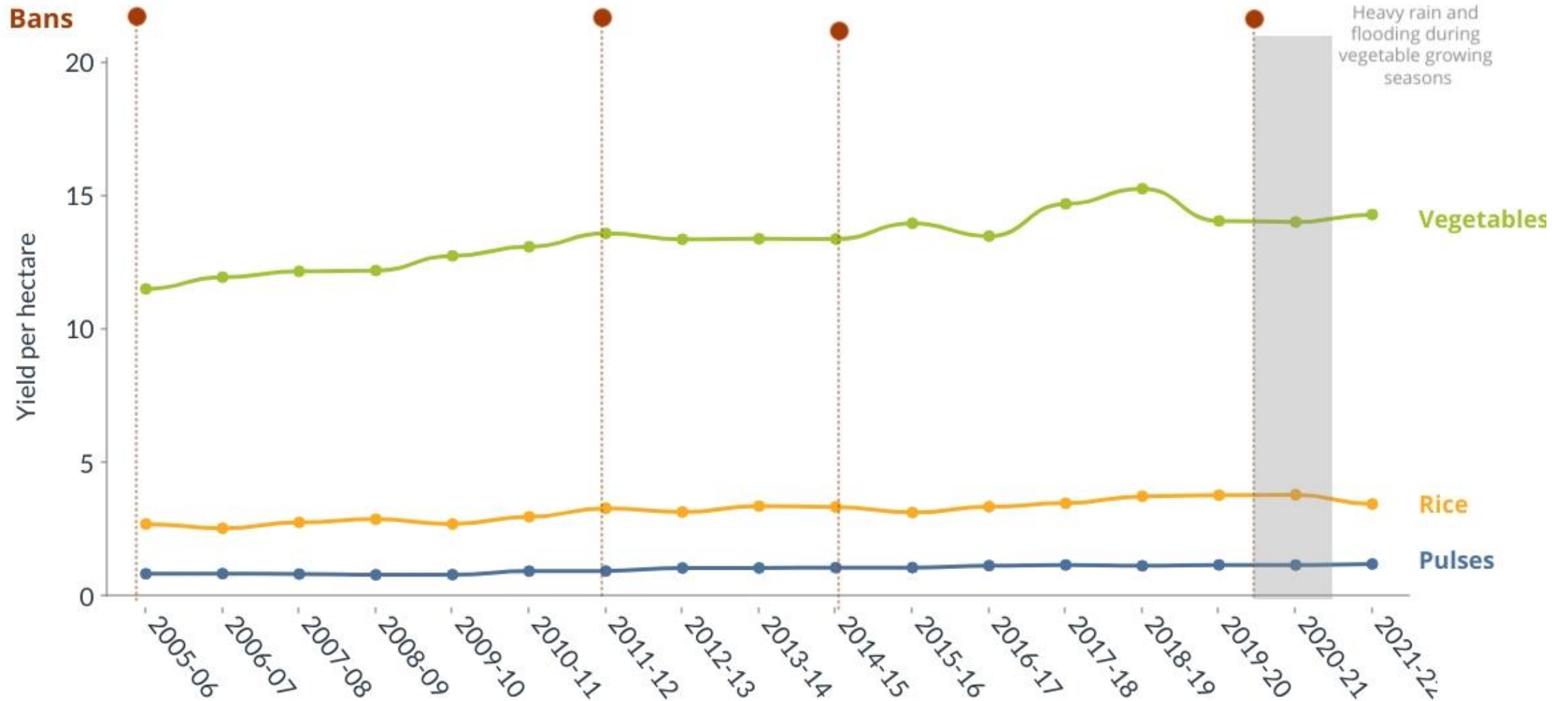
By Quarters



**Q0= Represents each Quarter of Preban period

*Q10- Only 2 months (Dec-Jan)

Pesticide bans in Nepal have had no negative impact on agricultural yield



Data source: Statistical Information of Nepalese Agriculture, Ministry of Agriculture and Livestock Development, Nepal 2005 to 2022

Discussion

- Ongoing study (September 2021 to August 2024) to see the impact of the pesticide bans
 - More data can help in guiding the exact impact.
- Limitations
 - Missing data on:
 - Date of outcome of poisoning
 - Active ingredients for all pesticide deaths
 - Previous study time period not specified the exact date of individual poisoning deaths.

Conclusion

- OP insecticides and aluminum phosphide were responsible for most pesticide suicides in Nepal
- Number of deaths from these pesticides has declined
- Increased in identifying the individual pesticide compounds
 - Chlorpyrifos and cypermethrin combination
 - Chlorpyrifos alone
- Encouraging toxicology laboratories can provide improved data that can be used to guide further pesticide regulation
- Incorporating the police report data in IHIMS portal looks crucial in order to encourage better research in this area



**BANNING HIGHLY HAZARDOUS
PESTICIDES (HHPs)
SAVES LIVES**

Thank You

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