

Fostering a Step Change in Mine Dust Control & Management

From Measuring Exposure to Preventing Exposure

06 August 2026

BT Mongoma

Technical Advisor: Occupational Hygiene



**mineral &
petroleum resources**

Department:
Mineral and Petroleum Resources
REPUBLIC OF SOUTH AFRICA

A NATION
THAT WORKS FOR ALL



WHY THIS MATTERS



3,120 Mining Dust Stock Photos, High-Res Pictures, and Images - Getty Images



<https://cdcdustcontrol.com/mining/>



If we continue to celebrate thousands of dust samples every quarter while employees remain overexposed, we are measuring success incorrectly.



The objective of occupational hygiene is not to measure dust... it is to prevent EMPLOYEES from breathing it.



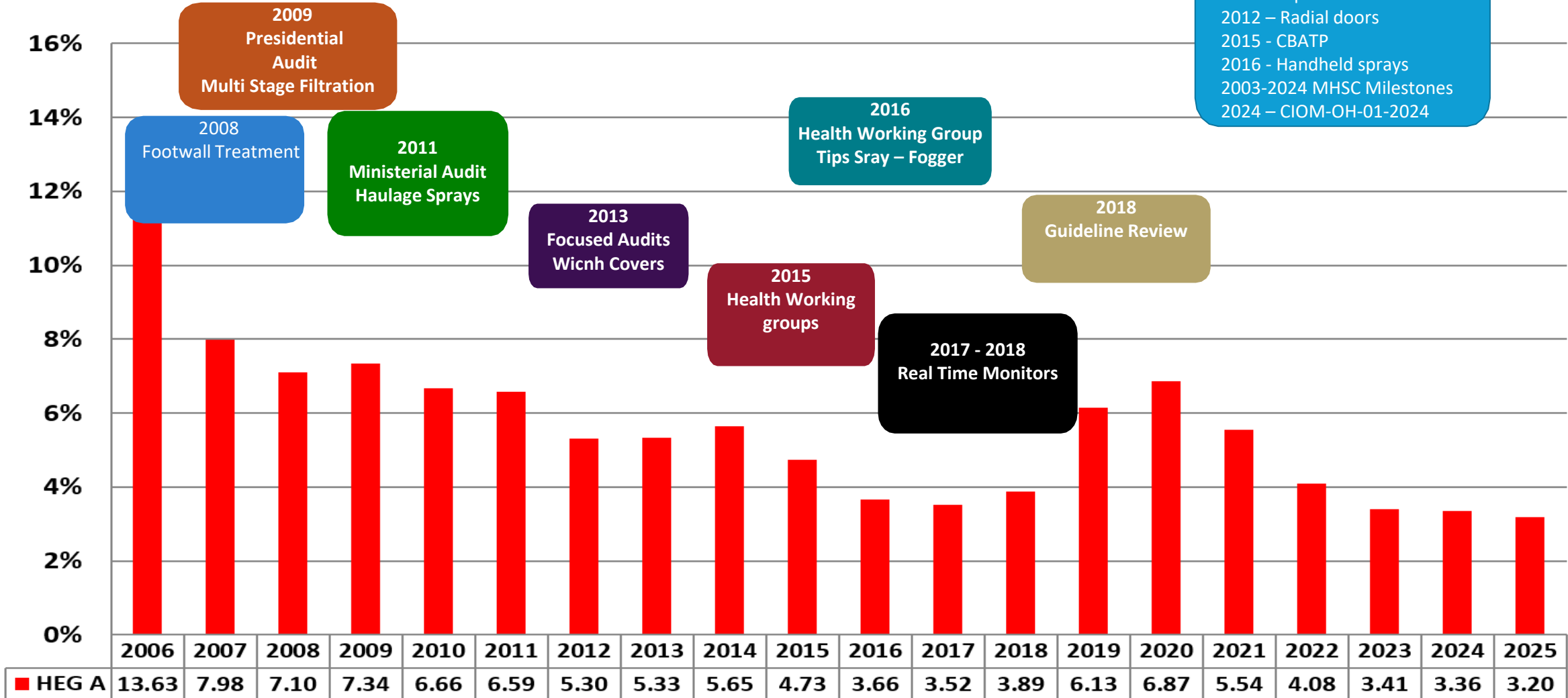
HAVE WE MADE THE PROGRESS?



Exposure to Airborne Pollutants > OEL

Percentage of Workers Exposed

Other Initiatives
 2011 – Tip covers
 2012 – Radial doors
 2015 - CBATP
 2016 - Handheld sprays
 2003-2024 MHSC Milestones
 2024 – CIOM-OH-01-2024

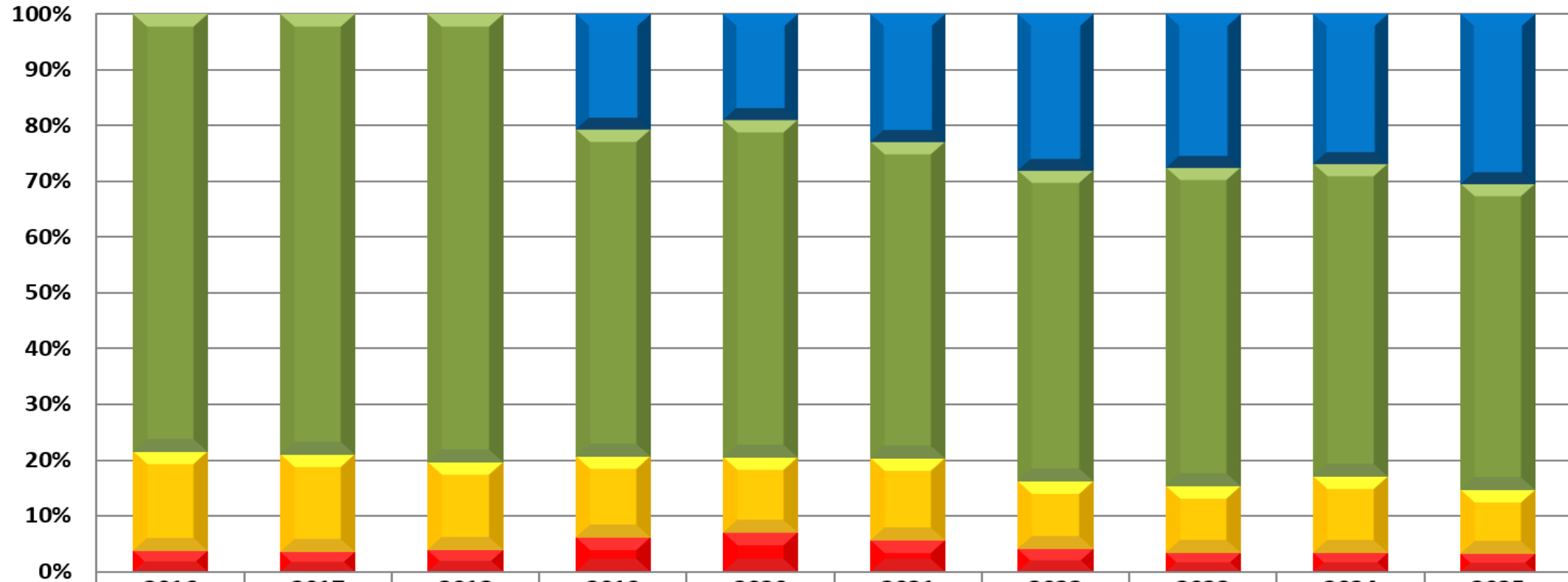


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HAVE WE MADE THE PROGRESS - YES



Percentage of employees exposed



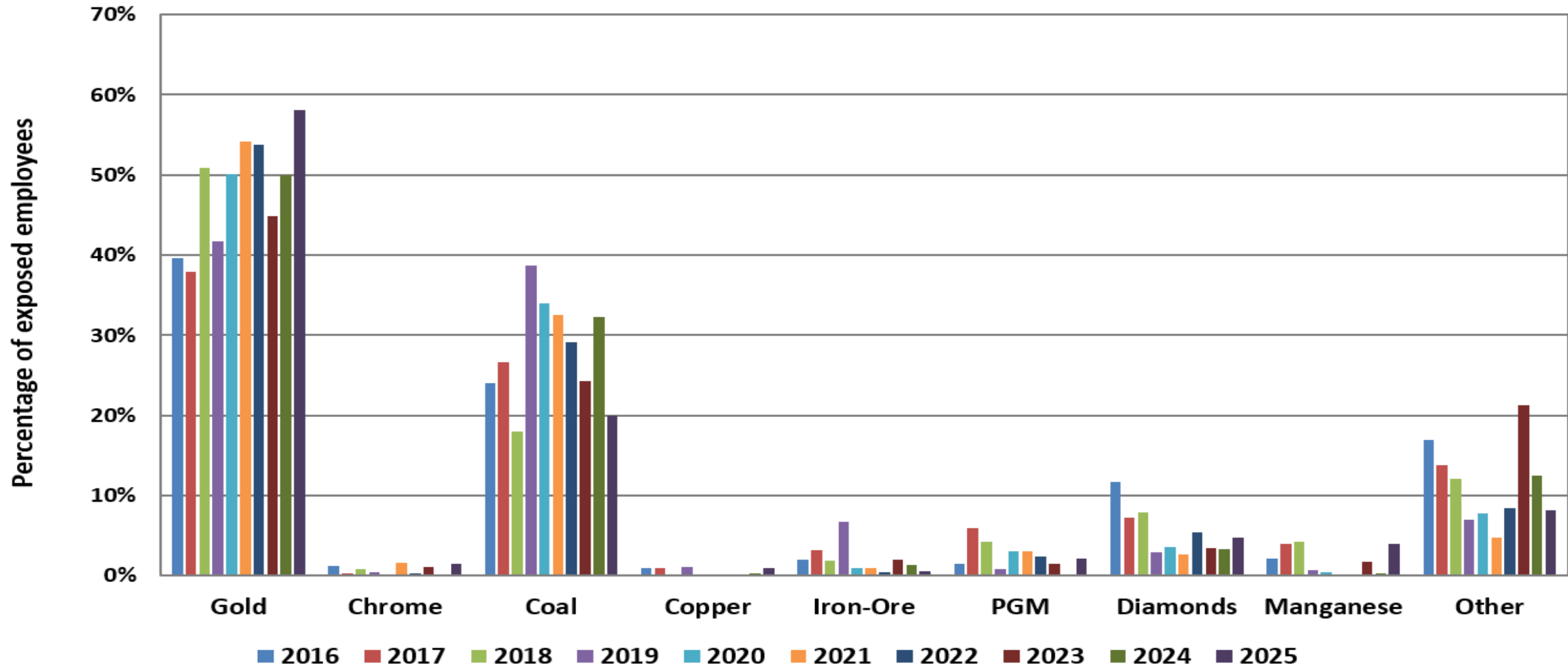
HEG D				20.64	18.90	22.91	27.90	27.51	26.81	30.43
HEG C	78.55	79.07	80.44	58.84	60.61	56.86	55.90	57.26	56.13	54.90
HEG B	17.79	17.45	15.68	14.39	13.61	14.69	12.12	11.82	13.70	11.47
HEG A	3.66	3.52	3.89	6.13	6.87	5.54	4.08	3.41	3.36	3.20

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HAVE WE MADE THE PROGRESS - YES

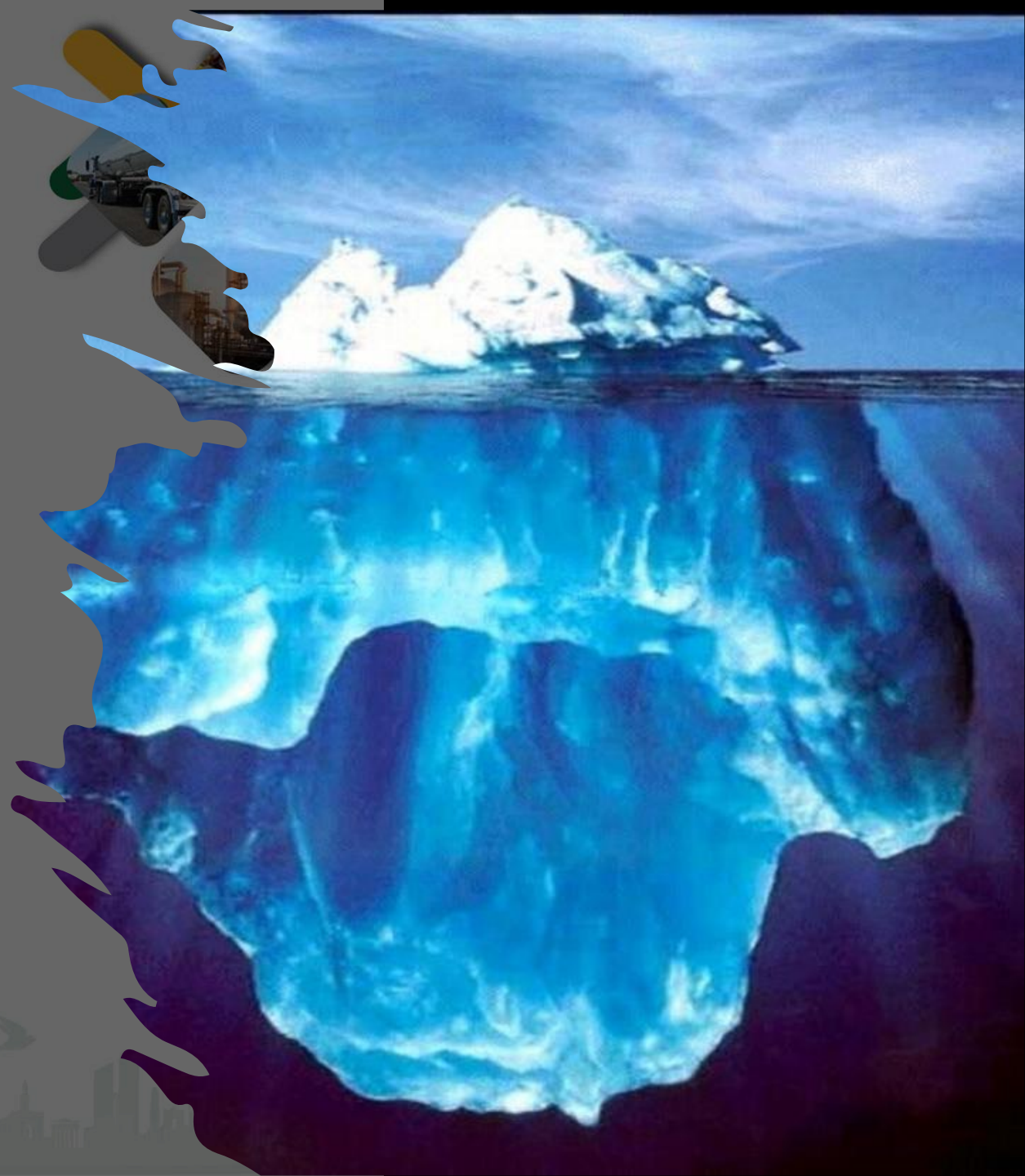


Exposure to Airborne Pollutants > OEL



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**HAVE WE MADE
THE PROGRESS –
THE HIDDEN**



HAVE WE MADE THE PROGRESS – NOT ENOUGH



Mine Accident Fatalities – visible, media attention.

Year	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Number of Fatalities	200	219	170	167	127	123	112	93	84	77	73	90	81	51	60	74	49	55	42	41



Occupational Diseases – The Hidden Burden

Year	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Total Occ. Diseases	8836	9240	10344	8040	8160	6394	6003	6810	6577	6540	4632	4483	3358	3130	2013	1924	2233	1864	1723	1739

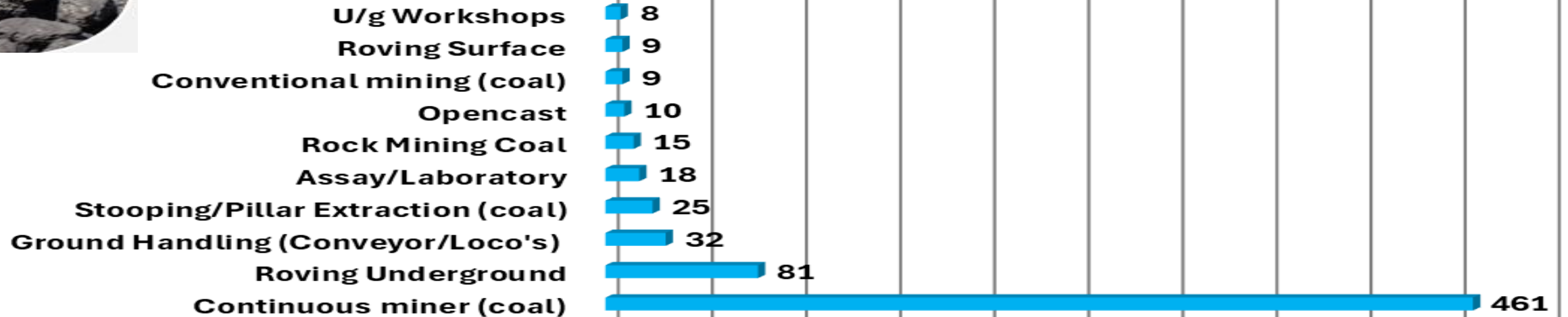
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HAVE WE MADE THE PROGRESS – NOT ENOUGH

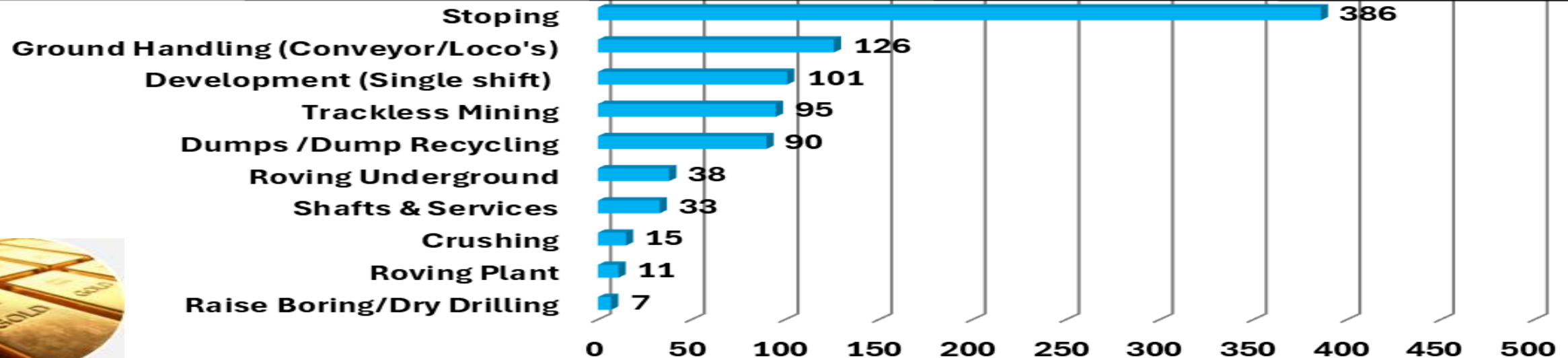


Top 10 Occupations > OEL: Airborne Pollutants

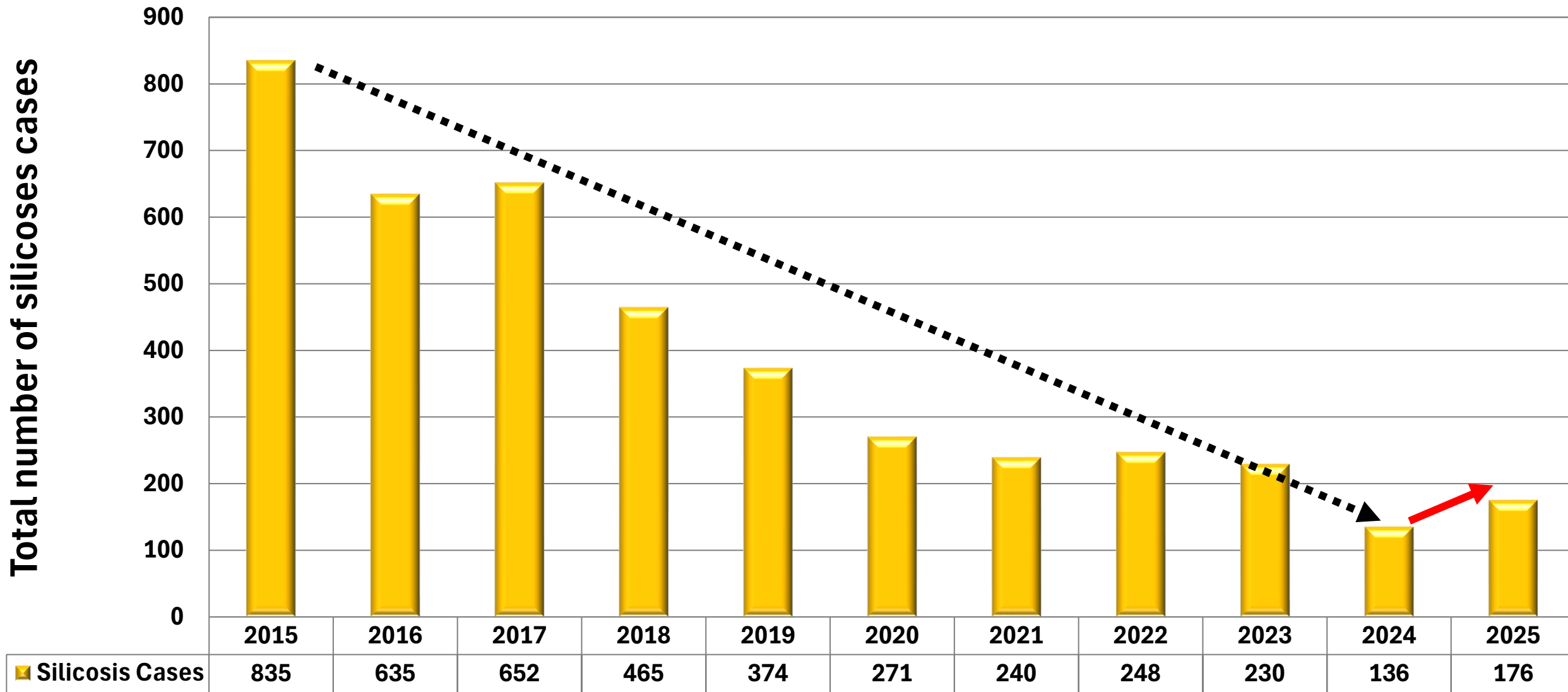
COAL



GOLD

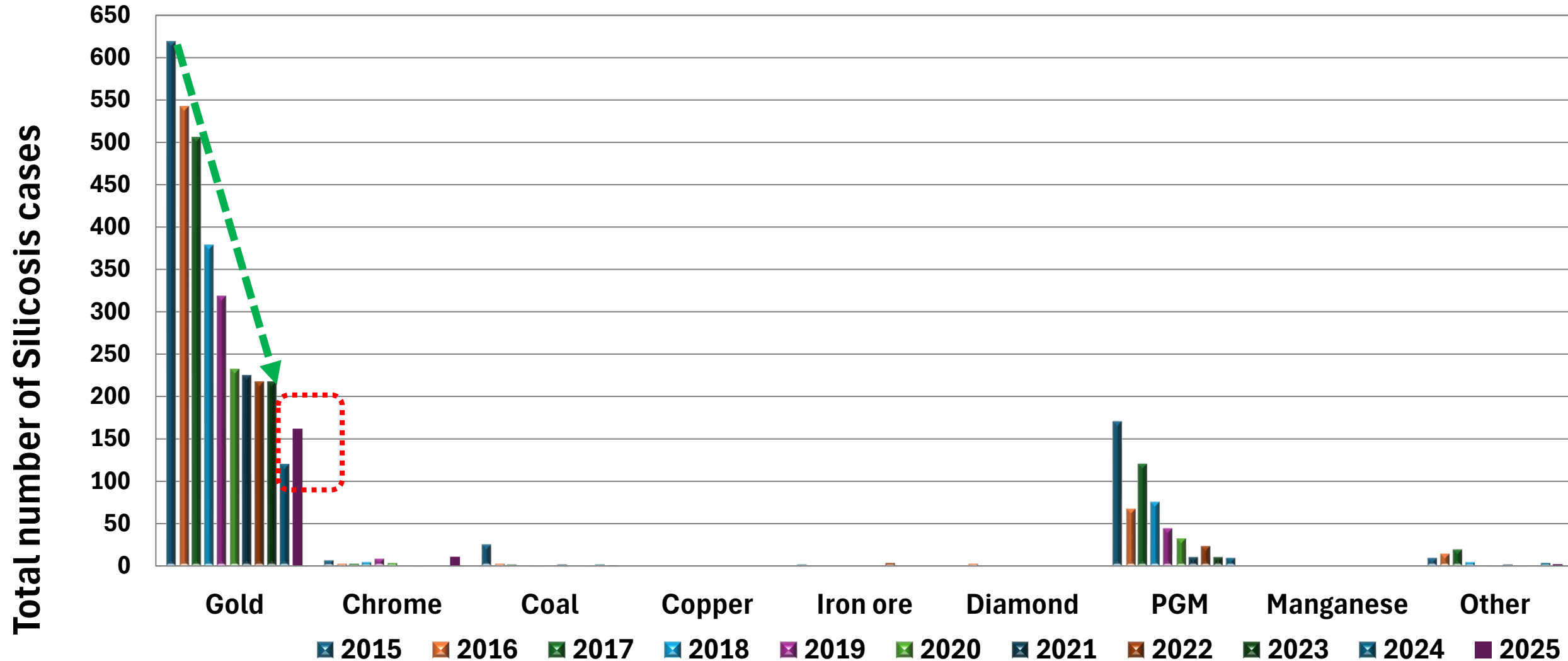


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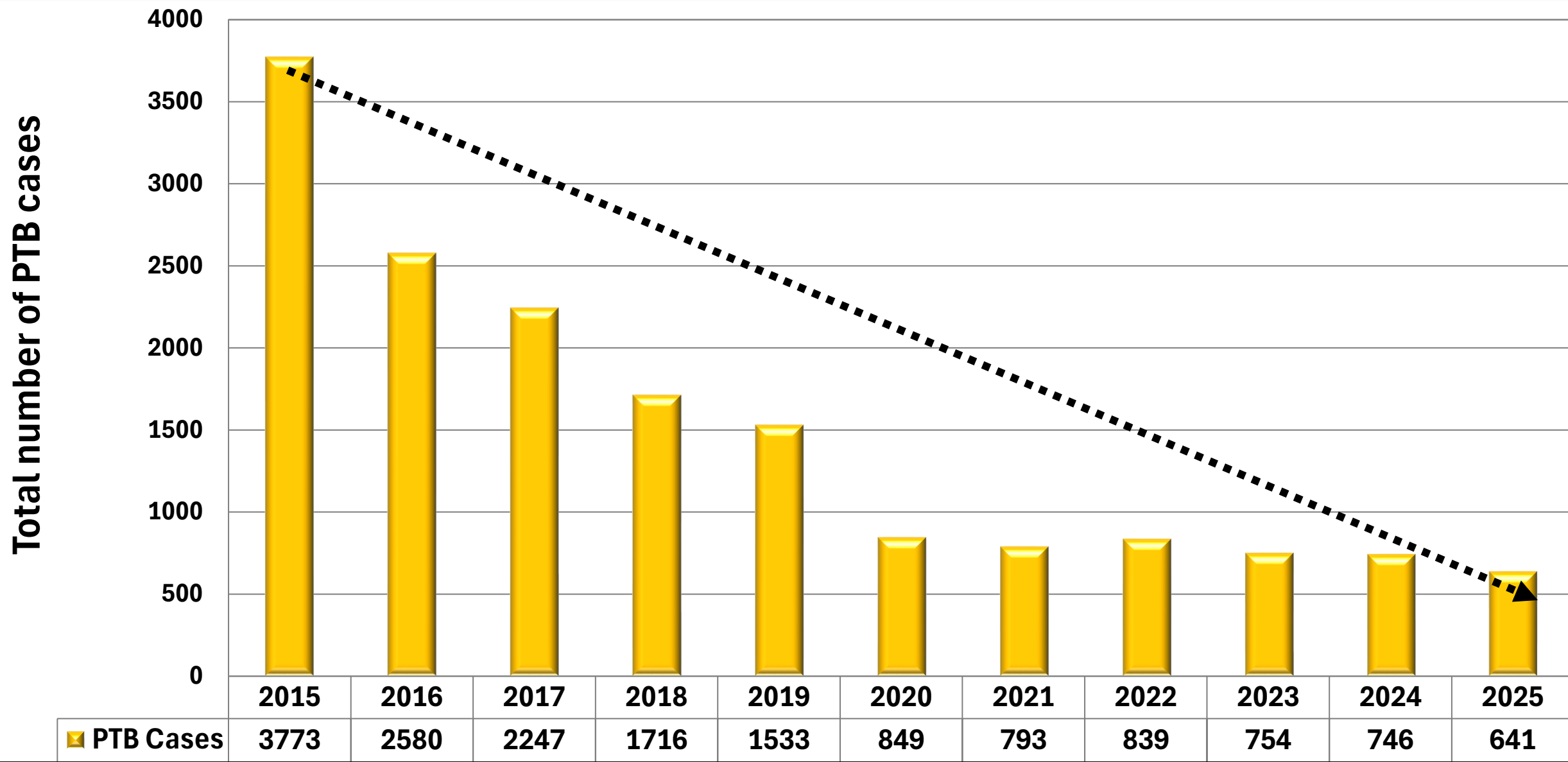
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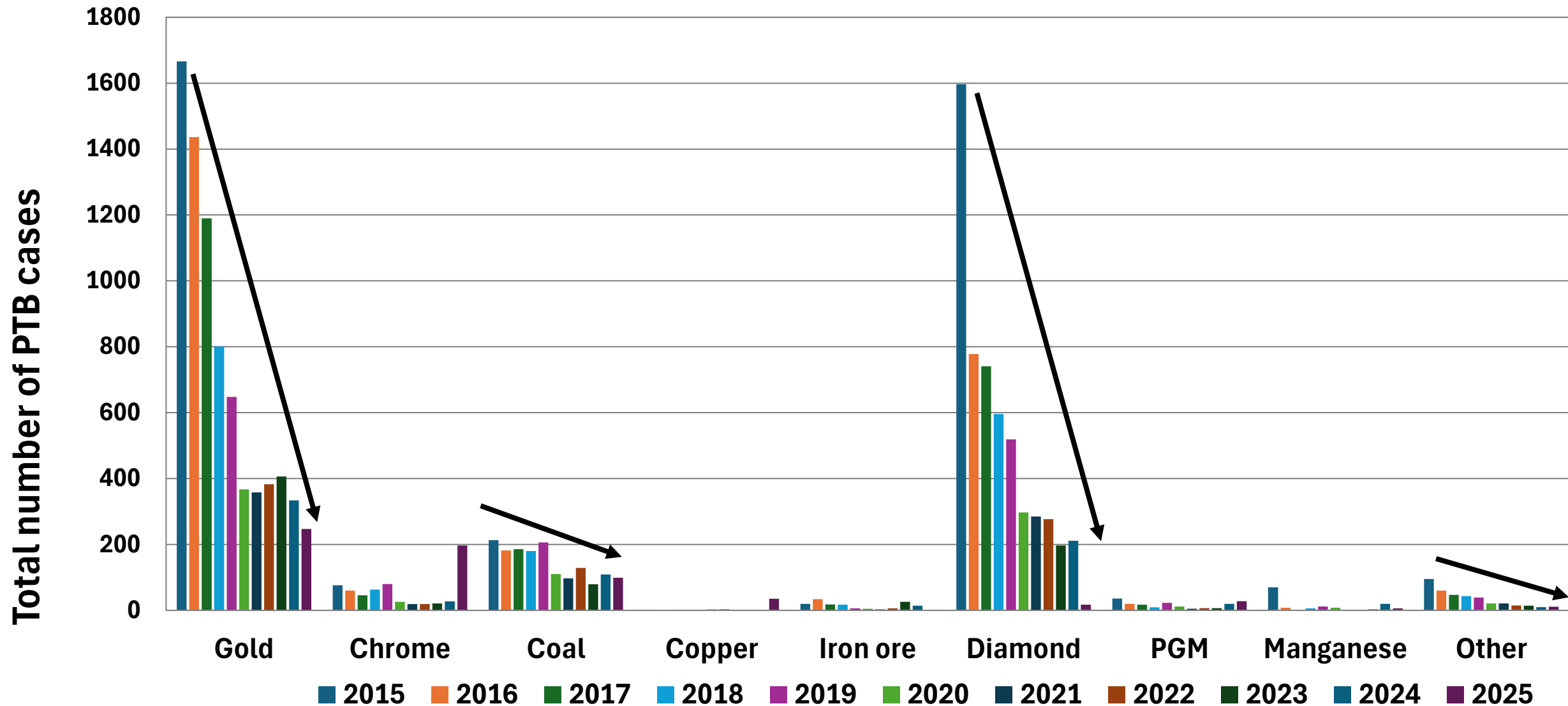


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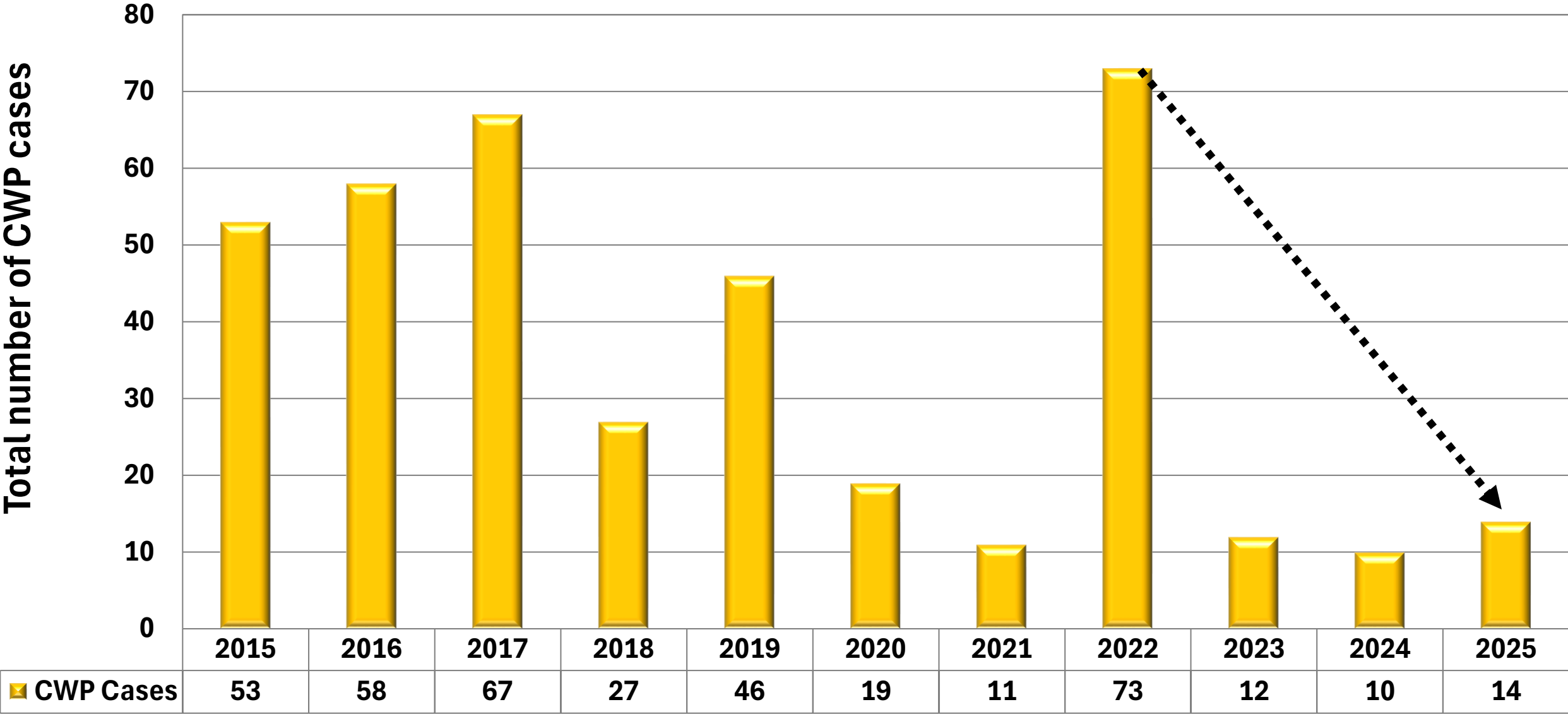


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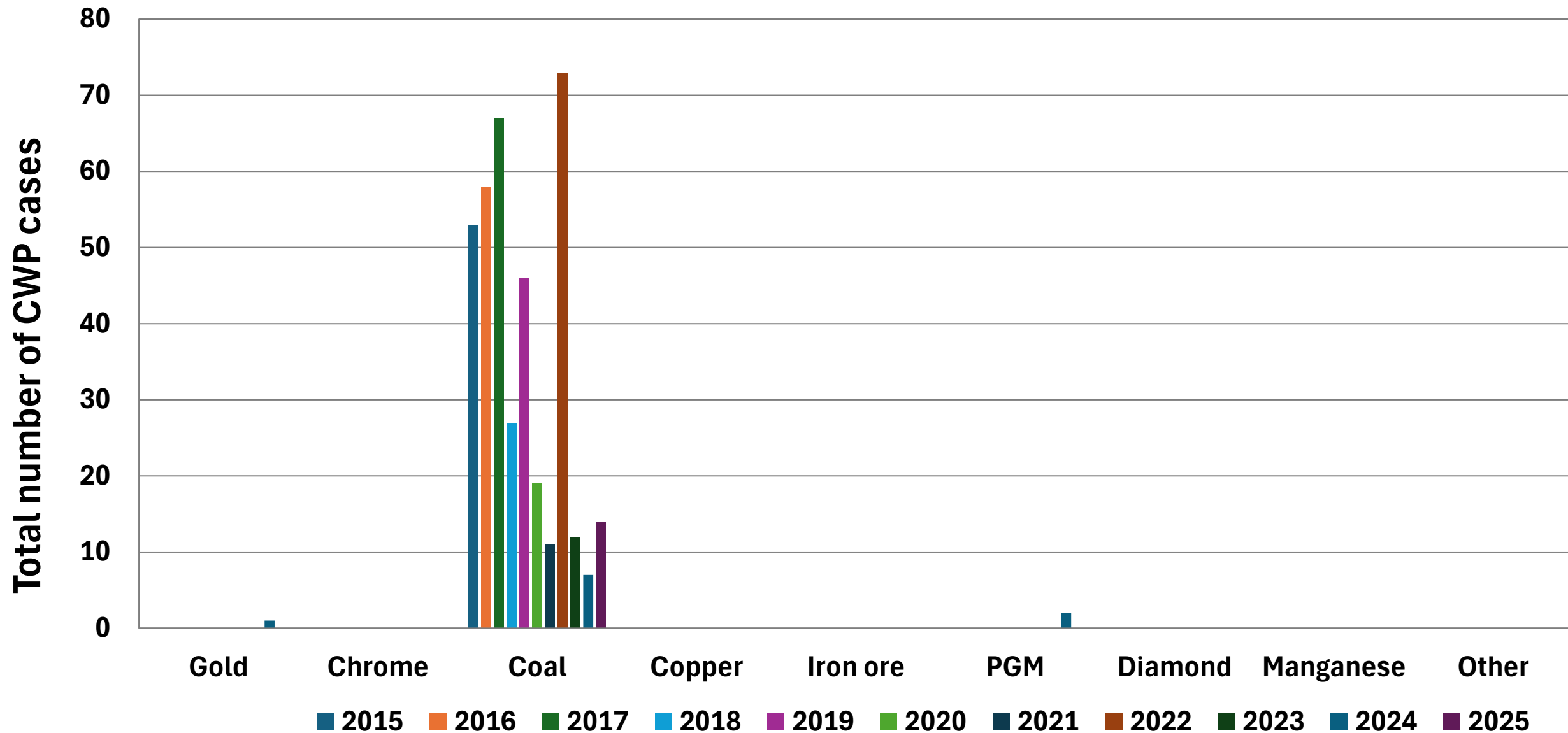
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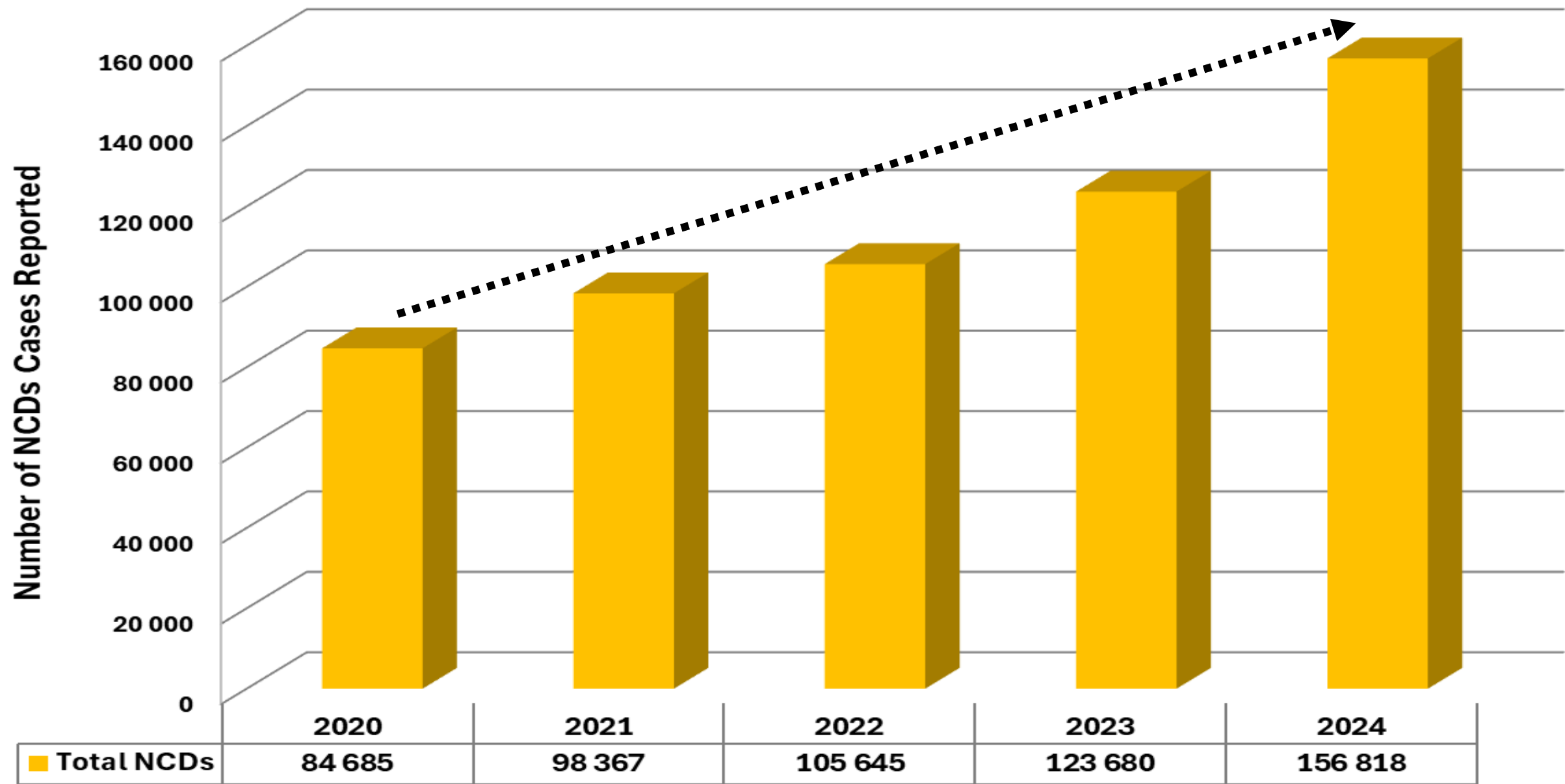
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HAVE WE MADE THE PROGRESS – NOT ENOUGH



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NON-COMMUNICABLE DISEASES



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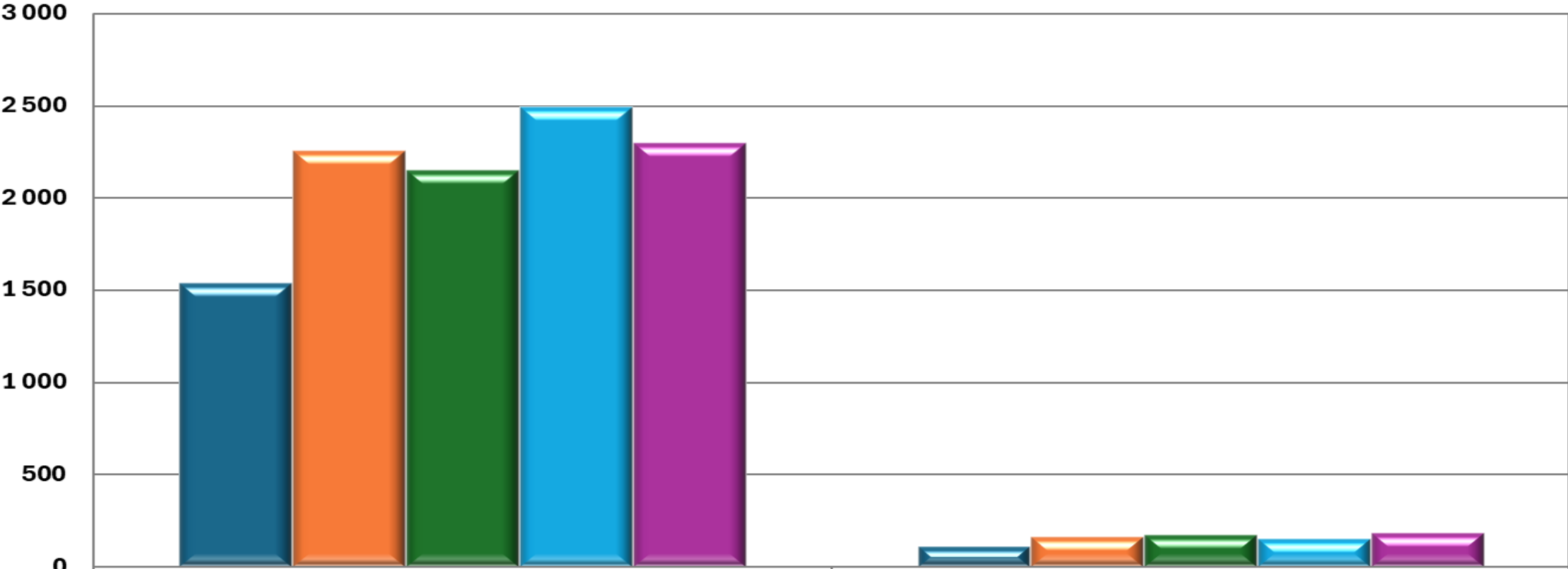
	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>2024</u>
Autoimmune disorders	1 884	1 776	2 506	1 843	1 535
Cancer	25	25	64	84	105
Cardiovascular diseases (CVD)	175	261	68	107	99
Cerebrovascular diseases	7	9	10	1	0
Chronic respiratory diseases (CRD)	1 840	2 309	2 379	2 753	2 492
Endocrine & metabolic disorders (EMD)	79 402	92 403	98 461	116 616	148 106
Diseases of the genitourinary system	5	38	75	121	48
Infectious diseases (Bacterial)	0	0	0	31	0
Mental health & behavioural disorders	401	517	468	650	1 570
Diseases of the musculoskeletal system	0	0	154	65	184
Neurological and sense organ disorders	946	1 029	1 460	1 395	1 894
Other/Unclassified NCDs	0	0	0	14	785
TOTAL	84 685	98 367	105 645	123 680	156 818

NON-COMMUNICABLE DISEASES



Chronic Respiratory Diseases

Number of Cases



	Asthma	COPD
2020	1535	117
2021	2254	172
2022	2151	181
2023	2492	157
2024	2299	191

WHY ARE WE HERE?



WHAT THE REGULATOR SEES

Mines cannot prove that employees are adequately protected

1. Every quarter, the DMPR receives statutory exposure data from mines across South Africa
 - quality challenges;
 - insufficient Monitoring programmes – focus on PNOC and RCS;
 - repetitions of corrective actions quarter to quarter – no improvement;
2. We conduct audits and conduct reviews
 - repetitive findings;
 - action plans not closed out;
 - Pls' offices not regularly updated on the progress made or lack thereof in line with initial submissions;



WHAT THE REGULATOR SEES



3. Risk Assessments:

- not considering life cycle or value chain;
- sometimes do identify hazards, not adequately;
- don't drive to controls.

4. Monitoring often confirms exposure, instead of assisting in preventing exposure.

5. HEGs are not always representative.

6. Occupational Hygiene and Ventilation Engineering programmes are sometimes poorly integrated.

7. Exposure data is not consistently translated into management decisions.

8. Engineering controls are not consistently evaluated for effectiveness.

Together these provide a national picture of exposure risk

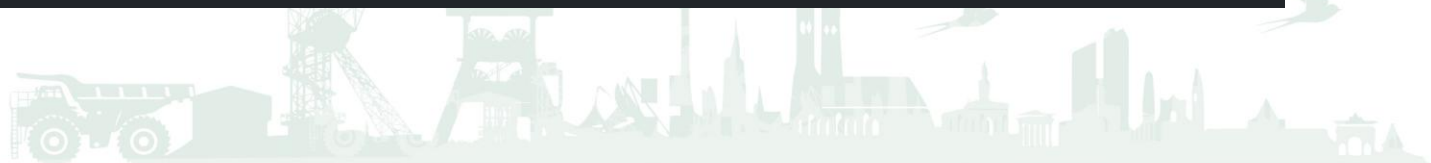


SYSTEMIC EXPOSURE GAP IN STANDARD OCCUPATIONAL MONITORING

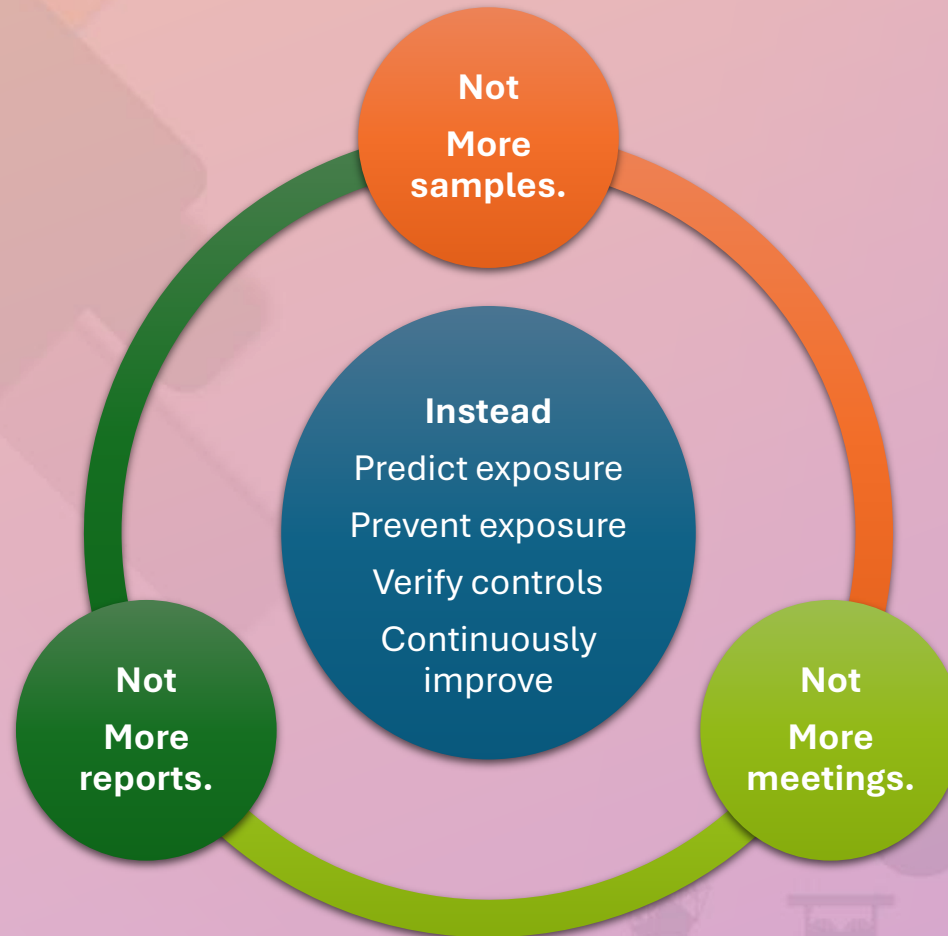


How many days of health exposure occur between step 2 and step 7 at your mine?

Where should an action have happened?



WHAT DOES "STEP CHANGE" ACTUALLY MEAN?



STEP CHANGE

Transforming occupational hygiene from a reactive process into proactive prevention



CURRENT STATE

Compliance

Sampling

Reactive

Department

Exposure



FUTURE STATE

Prevention

Moving past basic legal compliance tests to start aiming to actively eliminate workplace hazards.

Control Verification

Shifting from just measuring the problem to verifying that the engineering measures are effective and continuously working

Predictive

Using real-time indicators and operational data to stop exposures before they occur.

Integrated Teams

No longer just an occ.hygiene/vent department's problem. It becomes a shared responsibility across Integrated Teams(operations, engineering & maintenance)

Employee's Health

Transitioning from managing allowable limits to guaranteeing absolute long-term wellness.

WAYFORWARD

**What the
Regulator
will
continue
to focus
on:**

Implementation of the 2024 Instruction

Quality risk assessments

Monitor and ensure effective engineering controls

Ensure proactive exposure monitoring

Compliance with the revised OELs

Interventions driven by data

Continuous improvement



WAYFORD



We cannot sample our way to Zero Harm

We must control our way to Zero Harm

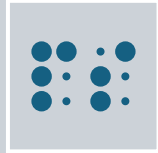
Every exposure prevented is a disease prevented



CONCLUSION



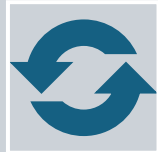
The South African mining industry does not lack knowledge.



It does not lack technology.



It does not lack monitoring data.



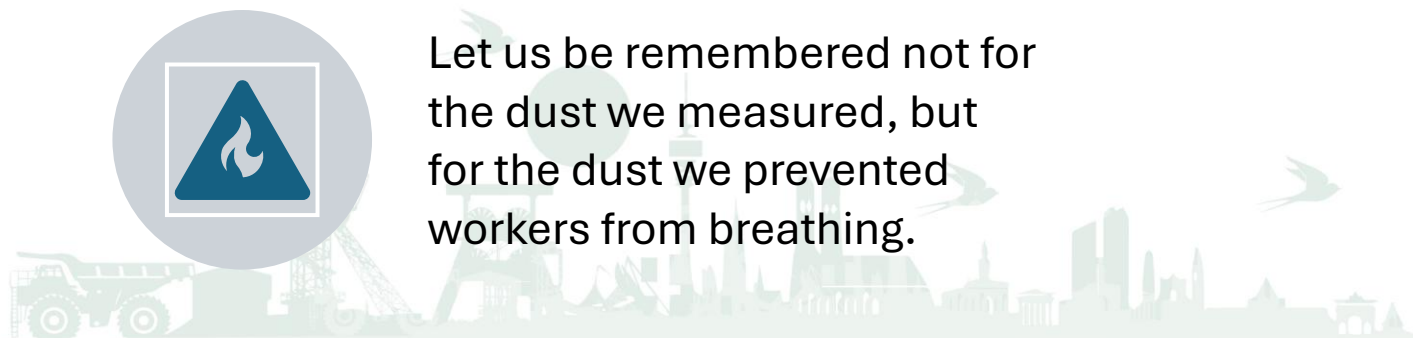
Our next step change will come from converting what we already know into consistent action that prevents exposure before it occurs.



As the regulator, our commitment is to support, guide and enforce where necessary—but eliminating occupational lung disease remains a shared responsibility.



Let us be remembered not for the dust we measured, but for the dust we prevented workers from breathing.





**The idea you implement is more important than
the ideas you collect.**

Sravani Saha Nakhro



THANK YOU

