Lead in Traditional Eyeliner

Sampling within the United States Cosmetics Market

PURE EARTH

December 2025

PURE EARTH

www.pureearth.org

Authors:
Talia Reiss, Richard Fuller, Kate Porterfield, Chris Kinally

For questions, comments and feedback, please contact:

Sarah Berg
Pure Earth
475 Riverside Drive, Suite 860
New York, NY 10115
sarahb@pureearth.org

Additional input provided by:

Stephen Whittaker, PhD, Hazardous Waste Management Program in King County, Washington

Gordon Binkhorst, PhD, Pure Earth's Senior Technical Advisor

Aesha Mokashi, MPH, Health & Environmental Investigator for Seattle & King County

Joanna Lowell, PhD, Pure Earth's V.P. of Technical Support and Research

Sarah Berg, Pure Earth's Assistant Director of Communications

Olivia Falcone, MPH, Pure Earth's Innovation Lab Program Manager

COVER PHOTO

GHANA

A boy in Ghana wears eyeliner, or 'chilo.'

Photo: Pure Earth

CONTENTS

Summary

Traditional eyeliners such as kohl, surma and kajal are well-documented sources of lead poisoning, particularly among people from Asia, North and West Africa, and the Middle East (Hore & Sedlar, 2024). With social media and global online marketplaces expanding product visibility, traditional eyeliners are now popular in the US. These products are regulated by the US Food and Drug Administration (FDA), which bans them as illegal color additives (US Food and Drug Administration, 2024a). Additionally, the FDA is responsible for enforcing a maximum lead concentration of 10 parts per million (ppm) in externally applied cosmetic products (US Food and Drug Administration, 2022).

Although kohl, kajal and surma are prohibited for sale in the United States, they can still be found online and on the shelves of local stores. We collected a small scoping sample of 56 eyeliners labeled as “kohl,” “surma” and “kajal” purchased online and in stores around New York City, including powder and cream formulations and products specifically labeled as being lead-free. Products were selected by convenience sampling and some products were purchased in duplicate. We measured their lead concentrations using an analytical technique called Inductively Coupled Plasma Mass Spectrometry (ICP-MS). Concerningly, over half (29/56) of the samples were above the FDA threshold of 10 ppm, many (9/56) of the samples had lead concentrations above 100,000 ppm and three samples had lead concentrations over 350,000 ppm. These results suggest that the FDA’s lead in cosmetics regulations are not being adequately enforced. In the U.S., lead-contaminated eyeliners present a risk of lead exposure, which has potentially severe impacts on neurological and cardiovascular health.

Concerningly, lead concentrations of up to 380,000 ppm were recorded in products labeled as ‘lead-free.’ Five of the 17 products labeled ‘lead-free’ had lead concentrations higher than 100,000 ppm, and 7 were above 1,000 ppm. Products with lead concentrations above 100,000 ppm were purchased from TikTok Shop, Amazon, Etsy and Ebay. In our sample, cream products (all < 100 ppm) had significantly lower lead concentrations than powder products ($P < 0.0001$), but further research is needed to verify this observation across the US market.

Introduction

Traditional eyeliners, commonly known as “kohl”, “kajal”, or “surma”, are prevalent in South Asia, North Africa, and the Middle East (US Food and Drug Administration, 2024a). These cosmetics were used as early as 5000 BCE by people in ancient Egypt and southern Iraq who believed the eyeliner could improve vision, cleanse the body, and protect against the evil eye (The Cultural Significance of Kohl in South Asian Cultures, n.d.) (Buffington, n.d.). The use of traditional eyeliners is a deeply ingrained cultural practice, in part because they are said to have been worn by the Prophet Muhammed (Hankir, 2024). They are commonly applied to the eyes of newborn babies and children, and also to the umbilical stump.

These products have become increasingly popular in the US due to social media advertising, as reported by fashion and beauty magazines (Marra, n.d.). Especially on TikTok, beauty influencers are promoting these eyeliners for their ability to define the eyes. The product can be purchased directly from the TikTok app using its e-commerce feature, TikTok Shop, streamlining the purchasing process.

Traditional eyeliners are available in powder or cream form and can be made from crushed lead sulfide, also known as galena (Ancient Egyptian Make-Up, n.d.), as well as other blackening agents like carbon black. Several studies have identified high lead concentrations in these products (Al-Ashban et al., 2004; Parry & Eaton, 1991; Mokashi, 2025). When they are applied to the eyelid margin, the lead can enter the body via hand-to-mouth contact or subdermal absorption through the eyes. These exposure routes have been shown to increase blood lead levels and cause lead poisoning (Lu et al., 2024; Naama et al., 2010).

The adverse health effects of lead exposure have been documented extensively (World Health Organization, 2024). Lead is known to cause cardiovascular disease and accounts for up to 5 million premature deaths every year (Navas-Acien et al., 2007; Larsen & Sánchez-Triana, 2023). Particularly in children, lead impacts physical and neurological development, causing impairment of the brain and nervous system, delayed growth and development, and learning and behavioural problems (Faust & Brown, 1987). These outcomes can result in a lower IQ, underperformance in schools, and other lifelong neurological impacts (CDC, 2025). In pregnant women, lead exposure increases the risk of gestational hypertension, low birthweight, and miscarriage (Yazbeck et al., 2009; Zhu et al., 2010).

All products that contain the ingredients “kohl,” “kajal,” and “surma,” which are considered color additives under section 201(t) of the Federal Food, Drug and Cosmetic Act, are illegal in the US (US Food and Drug Administration, 2024a). The FDA Import Alert 53-15 also bans the import of “any eye area cosmetic containing Kohl, Kajal, or Surma” (Import Alert 53-15, 2016). Typically, the FDA enforces import bans by examining or sampling products, issuing a refusal to import, or imposing civil money penalties or prosecution (US Food and Drug Administration, 2024b).

Our goal was to determine whether the current regulations are sufficient to protect US consumers from health risks of lead-containing eyeliners. Consequently, we analyzed the lead concentrations of these products available in the US, both from in-person stores and online retailers.

Methodology

Sampling

We collected products explicitly labeled as kohl (n=20), kajal (n=33), or surma (n=3), as the FDA specifically cautions against products with these names (US Food and Drug Administration, 2024a). As a scoping study, convenience sampling was used, not following a defined structure. A total of 56 samples (including duplicates) were collected (June 2024-March 2025) between New York City stores and online sites serving the US market, the dataset can be seen in Appendix B. Fifteen products were purchased in duplicate, one in triplicate, and the rest individually. The online marketplaces included eBay (n=12), Etsy (n=4), and TikTok Shop (n=7). Eighteen samples were ordered from Amazon due to its popularity within the US. Nine samples were purchased between one Sephora store (the most popular cosmetic chain in the US (Buchko, 2025)) and stores located in New York City's "Little India" neighborhood in the East Village of Manhattan, where there is a large concentration of South Asian residents and businesses ("How A Block In Manhattan's East Village Came To Be Known As Little India," 2023). Thirteen samples were selected because they were recommended in popular TikTok videos or sold directly on the TikTok Shop platform which typically hosts small, online businesses.

All samples arrived sealed and in their original packaging. Samples included an array of cream and powder formulations in various colors. Notably, four samples were specifically labeled for use on babies. A summary of the samples by their production country can be found in Appendix A.

Testing

ICP-MS Analysis
Samples were either transferred to sealed plastic bags or left in their original containers. They were shipped from New York City at room temperature to Complete Environmental Testing in Stratford, Connecticut, where they were analyzed for lead using inductively coupled plasma mass spectrometry (ICP-MS) at a reference level of 2.0 mg/kg (i.e., 2 ppm).

Sample Categorization
Samples were categorized by name (kohl, kajal, or surma), formulation (powder or cream), color (black or nonblack), whether the product manufacturer was based in a high-income country (HIC) or a low- or middle-income country (LMIC) (including upper-middle-income), and whether the product was labeled lead-free. Samples that were listed online as both kohl and kajal were categorized according to the primary name on the packaging, sometimes translated from Arabic. Samples designated 'cream' had a waxy, smooth, or gel-like texture and were contained in a plastic or wood pencil stick or flat disc. Samples designated 'powder' were loose powders contained in glass, plastic, or metal jars. We also noted which samples included a label reading 'lead-free,' 'Pb-free,' '0% Pb', or an equivalent variation on their packaging or online listing.

Results

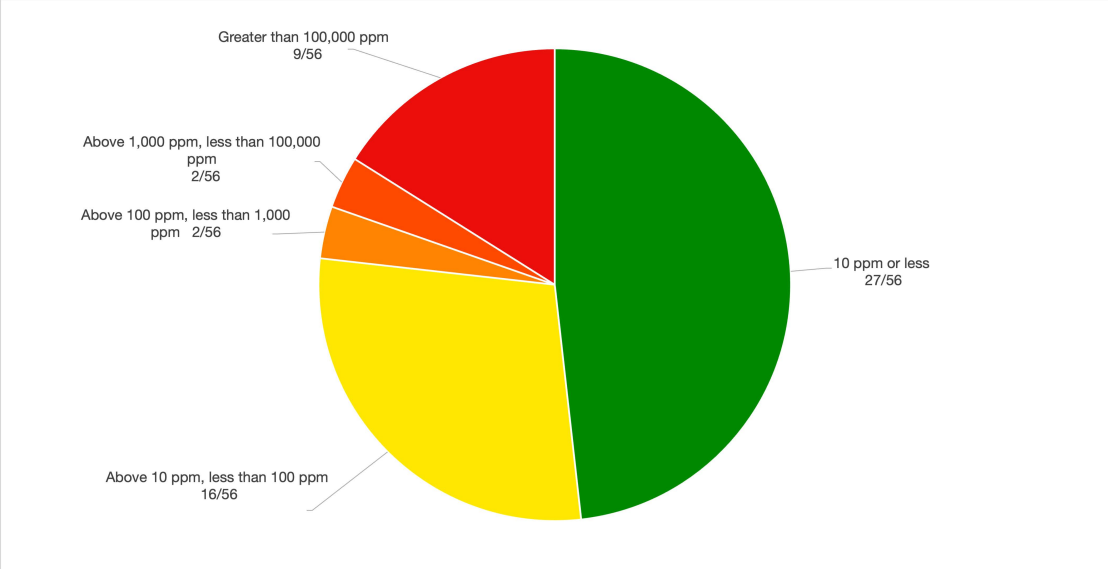

Figure 1. Lead concentrations in a sample of traditional eyeliners available to purchase in the US through online marketplaces (n=47) and over the counter in New York (n=9).

The lead concentration of all samples is summarized in Figure 1. More than half (29/56) of all samples exceeded the FDA's maximum level (10 ppm) of lead in cosmetics, posing a risk of lead poisoning to consumers. Concerningly, 11/56 products exceeded 1,000 ppm, and 9/56 samples exceeded 100,000 ppm. In our sample, cream formulations had significantly lower lead concentrations than powder formulations ($P < 0.0001$). All of the cream products were below 100 ppm, whereas half of the powder samples contained more than 100,000 ppm of lead, and only 2 of the 18 powder samples were below the 10 ppm FDA limit.

Of the 17 samples labelled as lead-free, 13 exceeded the 10 ppm FDA limit, 7 were above 1,000 ppm and 5 were above 100,000 ppm. The sample with the highest recorded lead concentration (380,000 ppm) was a powder with a 'lead-free' label sold on TikTok Shop. Of the 9 products purchased over the counter, 5 exceeded the 10 ppm FDA limit, with a maximum lead concentration of 400 ppm. All of the samples above 1,000 ppm (11/56) were sourced online. Products with lead concentrations above 1,000 ppm were listed as manufactured in Pakistan, Saudi Arabia, Morocco, India, and the US; they were purchased from eBay, Etsy, Amazon, TikTok Shop, and small online sites recommended on TikTok.

Discussion

Our study consists of only a small scoping sample, however, highly toxic traditional cosmetic products were found to be available in the US, despite FDA regulation. More than half of the products tested were above the FDA limit, and many products (9/56) were more than 10,000 times over the FDA limit, containing up to 380,000 ppm (38% lead). The severe health impacts of lead poisoning from traditional eyeliners are well documented in LMICs, causing elevated blood lead levels and contributing to IQ loss and increased risk of cardiovascular disease and premature death (Kinally et al., 2025). The findings of this study highlight that US consumers are also potentially at risk of lead poisoning from traditional eyeliners and suggest that the FDA's regulation of lead in traditional eyeliners is currently insufficient.

Even US consumers who are aware of the dangers of lead and taking active precautions against lead-containing traditional eyeliners may be at risk. Lead-free labels were found to often be false, with more than half lead-free labeled products exceeding the FDA limit. The highest recorded lead concentration (380,000 ppm) was a product labeled as lead-free. Children are particularly vulnerable to lead due to lead's effects on physical and neurological development and may frequently ingest lead due to hand-to-mouth practices (Families of Lead Exposed Children, n.d.). Concerningly, three samples labeled "baby kajal" contained lead above the FDA limit. Other potentially significant observations include cream products having lower lead levels than powders and online products having higher lead levels than store-bought. However, with the limited scope of our study and the non-representative sample, further research is needed to validate these findings across the US market.

Importing Galena for use in cosmetics is banned by the FDA. However, one of the products listed as being manufactured in the US was found to have a lead concentration of 120,000 ppm (12% lead). Manufacturing Kohl products is very accessible and can be made at home from grinding ore materials such as Galena (lead sulphide) into a powder with a pestle and mortar. Therefore, it may also be necessary to better regulate imports of Galena to mitigate health risks from kohl products in the US.

While some may consider traditional eyeliners to be niche products, they are enormously popular and growing in popularity in the US due to advertising on social media, particularly TikTok (Hankir, 2024; Marra, n.d.). Directing social media users to a product known to be contaminated with lead presents a serious public health concern. Alarmingly, 5 of the 13 samples sold on TikTok Shop contained more than 100,000 ppm lead.

Discussion

Continued

The products found to exceed the 10 ppm limit were distributed across 26 different manufacturers and vendors. We tried to contact all of these suppliers to notify them that their products exceeded the FDA limit. However, contact information could not be found for a third of the suppliers. Other vendors and product listings had been removed from online marketplaces between us purchasing the samples and receiving the results. A total of 17 suppliers were contacted, only eight responded. Half of the responding suppliers disputed that either their products contained lead or that their products posed a health risk to consumers. One supplier said that they were committed to reformulating their product to be lead-free, but we have not tested to confirm whether the product remains contaminated. Another supplier disputed the safety concerns and claimed to have shut down their shop; however, at the time of writing this article, their kohl products remained available online. Pure Earth is now in the process of notifying the four online marketplaces (eBay, Etsy, TikTok and Amazon) and has alerted the New York City Department of Health & Mental Hygiene.

The findings of this study highlight the need for increased government surveillance of lead in the US cosmetics market and imported cosmetic products. Further research is needed to reveal the health burden of lead poisoning from traditional eyeliners in the US, amongst other consumer products. Furthermore, encouraging regulatory progress in countries exporting traditional eyeliners should be a priority to enforce changes in the production practices for traditional cosmetics to reduce the lead content in cosmetics globally.

Conclusion

This study reinforces that the issue of lead contamination of traditional eyeliners is not restricted to low- or middle-income countries (LMICs); it is a significant concern within the US. Enforcement of FDA regulations is clearly ineffective, putting US consumers at risk of lead poisoning.

In addition, stricter enforcement of regulations is essential to ban the sale and production of lead-contaminated eyeliners in their countries of origin and to ensure the products are reformulated to be lead-free. Further research is needed to determine the responsiveness of cosmetics manufacturers, resellers, and governments to concerns about lead in cosmetics, as well as the receptiveness of communities to using comparable alternatives.

Limitations

A key limitation was the use of convenience sampling, which potentially limits the representativeness of the data. Future research should include a broader and more strategic sampling of products, with more samples purchased from in-person stores outside of New York to better capture domestic availability.

Acknowledgments

Stephen Whittaker from the Hazardous Waste Management Program in King County, Washington, and Aesha Mokashi from the University of Washington contributed to early discussions about study design. Gordon Binkhorst, Pure Earth's Senior Technical Advisor, helped coordinate lab testing.

APPENDIX A:

Summary of Samples by Production Country

Production Region	Production Country	Number of Samples
All Samples	*Brazil	2
	*China	8
	*Egypt	1
	France	1
	Germany	8
	*India	15
	Italy	4
	*Morocco	2
	*Pakistan	5
	Saudi Arabia	6
	*Turkey	1
	US	3

*Low- and middle-income country

APPENDIX B:

ICP-MS Results

Sample Name	Brand	Site Obtained	Online	Type	Formulation	Color	Production Region	Lead-Free Label?	ICP-MS (ppm)
A	11	Tiktok shop	Yes	Kohl	Powder	Black	Pakistan	Yes	380,000
A DUPLICATE	11	Tiktok shop	Yes	Kohl	Powder	Black	Pakistan	Yes	290,000
B	14	Tiktok shop	Yes	Kohl	Powder	Black	Morocco	No	360,000
C	31	Other online site	Yes	Kohl	Powder	Black	Morocco	No	360,000
D	2	eBay	Yes	Surma	Powder	Black	Saudi Arabia	No	240,000
E	5	Etsy	Yes	Kajal	Powder	Black	India	No	240,000
E DUPLICATE	5	Amazon	Yes	Kajal	Powder	Black	India	Yes	270,000
F	10	eBay	Yes	Kohl	Powder	Black	Saudi Arabia	Yes	220,000
G	9	Tiktok shop	Yes	Kohl	Powder	Black	USA	Yes	120,000
H	10	eBay	Yes	Kohl	Powder	Red	Saudi Arabia	Yes	3,900
I	3	eBay	Yes	Kohl	Powder	Brown	Saudi Arabia	Yes	3,300
J	1	In person	No	Kohl	Powder	Black	India	Yes	400
J DUPLICATE	1	eBay	Yes	Kohl	Powder	Black	India	Yes	ND
K	15	eBay	Yes	Surma	Powder	Black	Saudi Arabia	No	120
L	20	Amazon	Yes	Kajal	Cream	Black	China	No	68
L DUPLICATE	20	Amazon	Yes	Kajal	Cream	Black	China	No	14
M	27	Etsy	Yes	Kajal	Cream	Black	Pakistan	Yes	65
N	5	Etsy	Yes	Kajal	Cream	Black	India	Yes	41
N DUPLICATE	5	Etsy	Yes	Kajal	Cream	Black	India	Yes	39
O	30	In person	No	Kajal	Cream	Black	India	No	26
O DUPLICATE	30	eBay	Yes	Kajal	Cream	Black	India	No	15
P	16	In person	No	Kajal	Cream	Brown	Germany	No	24
P DUPLICATE	16	eBay	Yes	Kajal	Cream	Brown	Germany	No	3.7
Q	32	Amazon	Yes	Kohl	Cream	Black	China	No	22
Q DUPLICATE	32	Amazon	Yes	Kohl	Cream	Black	China	No	3
R	17	Amazon	Yes	Kohl	Powder	Navy	France	No	20
S	19	Other online site	Yes	Kajal	Cream	Black	Germany	No	17

S DUPLICATE	19	Amazon	Yes	Kajal	Cream	Black	Germany	No	2.4
T	21	In person	No	Kohl	Powder	Black	Egypt	Yes	16
U	22	Amazon	Yes	Kajal	Cream	Black	India	Yes	13
U DUPLICATE	22	Amazon	Yes	Kajal	Cream	Black	India	Yes	7.4
V	20	Amazon	Yes	Kajal	Cream	Black	China	No	12
V DUPLICATE	20	Amazon	Yes	Kajal	Cream	Black	China	No	6.4
V TRIPLICATE	20	Amazon	Yes	Kajal	Cream	Black	China	No	ND
W	11	In person	No	Kajal	Cream	Black	Pakistan	No	11
X	29	Amazon	Yes	Kohl	Powder	Black	Turkey	No	11
Y	6	eBay	Yes	Kajal	Cream	Black	India	Yes	10
Z	7	In person	No	Kohl	Cream	Black	Germany	No	10
AA	13	In person	No	Kohl	Cream	Black	Germany	No	7.2
AA DUPLICATE	13	Other online site	Yes	Kohl	Cream	Black	Germany	No	2.1
AB	15	eBay	Yes	Surma	Powder	Red	Saudi Arabia	No	6.7
AC	20	Amazon	Yes	Kajal	Cream	Black	USA	No	6.2
AD	18	In person	No	Kajal	Cream	Black	India	No	5.9
AE	12	In person	No	Kajal	Cream	Black	India	No	5.3
AF	8	Amazon	Yes	Kajal	Cream	Black	Brazil	No	4.5
AF DUPLICATE	8	Other online site	Yes	Kajal	Cream	Black	Brazil	No	ND
AG	26	Amazon	Yes	Kajal	Cream	Black	Italy	No	4.3
AG DUPLICATE	26	Amazon	Yes	Kajal	Cream	Black	Italy	No	ND
AH	28	eBay	Yes	Kajal	Cream	Black	India	No	4.2
AH DUPLICATE	28	Other online site	Yes	Kajal	Cream	Black	India	No	ND
AI	24	eBay	Yes	Kohl	Cream	Black	Pakistan	No	3.4
AJ	23	Tiktok shop	Yes	Kajal	Cream	Black	Italy	No	3.2
AJ DUPLICATE	23	Tiktok shop	Yes	Kajal	Cream	Black	Italy	No	ND
AK	7	Other online site	Yes	Kohl	Cream	Grey	Germany	No	2.2
AL	25	Amazon	Yes	Kajal	Cream	Black	USA	No	2
AM	4	Tiktok shop	Yes	Kajal	Cream	Black	China	Yes	ND

*__Grey shading__: Sample contains less than 10 ppm lead (below FDA threshold)

*__ND__: Not Detected

*The reporting limit for ICP-MS was 2 mg/kg

REFERENCES

Al-Ashban, R. M., Aslam, M., & Shah, A. H. (2004). Kohl (surma): A toxic traditional eye cosmetic study in Saudi Arabia. *Public Health, 118*(4), 292–298. https://doi.org/10.1016/j.puhe.2003.05.001

Ancient Egyptian make-up. (n.d.). *Pitt Rivers Virtual Collections*. Retrieved May 13, 2025, from https://web.prm.ox.ac.uk/bodyarts/index.php/temporary-body-arts/cosmetics/79-ancient-egyptian-make-up.html

Buchko, M. (2025, April). *Beauty, cosmetics & fragrance stores in the US: Market research report (2015–2030)*. IBISWorld. https://www.ibisworld.com/united-states/industry/beauty-cosmetics-fragrance-stores/1055/

Buffington, K. (n.d.). *Eyeliner, Egypt, 4000 BCE*. Smith College, Virtual Museum of Ancient Inventions. Retrieved May 13, 2025, from https://www.smith.edu/bigbad/historyscitech/museum/ancient_inventions/eyeliner2.html

Centers for Disease Control and Prevention. (2025, March 13). *About childhood lead poisoning prevention*. https://www.cdc.gov/lead-prevention/about/index.html

Families of lead exposed children. (n.d.). *Illinois Department of Public Health*. Retrieved June 30, 2025, from https://dph.illinois.gov/topics-services/environmental-health-protection/lead-poisoning-prevention/families-of-lead-exposed-children.html

Faust, D., & Brown, J. (1987). Moderately elevated blood lead levels: Effects on neuropsychologic functioning in children. *Pediatrics, 80*(5), 623–629. https://doi.org/10.1542/peds.80.5.623

Hankir, Z. (2024, February 29). The eyes have it: The intriguing history of kohl. *CNN*. https://www.cnn.com/2024/02/29/style/eyeliner-kohl-cultural-history/index.html

Hore, P., & Sedlar, S. (2024). Traditional eye cosmetics and cultural powders as a source of lead exposure. *Pediatrics, 154*(Suppl. 2), e2024067808O. https://doi.org/10.1542/peds.2024-067808O

How a block in Manhattan's East Village came to be known as Little India. (2023, December 5). *Madras Courier*. https://madrascourier.com/insight/how-a-block-in-manhattans-east-village-came-to-be-known-as-little-india/

Import Alert 53-15. (2016, October 6). *Detention Without Physical Examination of Cosmetics Due to Microbiological Contamination*. U.S. Food and Drug Administration. https://www.accessdata.fda.gov/cms_ia/industry_53.html

Kinally, C., Fuller, R., Larsen, B., Hu, H., & Lanphear, B. (2025). A review of lead exposure source attributional studies. *Science of the Total Environment, 990*, 179838. https://doi.org/10.1016/j.scitotenv.2025.179838

Larsen, B., & Sánchez-Triana, E. (2023). Global health burden and cost of lead exposure in children and adults: A health impact and economic modelling analysis. *The Lancet Planetary Health, 7*(10), e831–e840. https://doi.org/10.1016/S2542-5196(23)00166-3

Lu, Y., Chandan, A. K., Mehta, S., Kushwaha, M., Kumar, A., Ali, M., Srivastava, A., Ghosh, A. K., Bose-O'Reilly, S., Nambiar, L., & Kass, D. (2024). Assessment of prevalence of elevated blood lead levels and risk factors among children and pregnant women in Bihar, India. *Environmental Research, 259*, 119528. https://doi.org/10.1016/j.envres.2024.119528

Marra, M. (n.d.). Black eyeliner makeup: The return of kajal and kohl. *Grazia*. Retrieved May 20, 2025, from https://graziamagazine.com/us/articles/black-eyeliner-return-kajal-kohl/

Mokashi, A., Fellows, K. M., Chin, R. J., Whittaker, S. G., Simpson, C. D., & Ceballos, D. M. (2025). Lead in traditional eyeliners: An investigation into use and sources of exposure in King County, Washington. *PLOS Global Public Health, 5*(6), e0004643. https://doi.org/10.1371/journal.pgph.0004643

Naama, L. M. A., Hassan, M. K., Hehdi, J. K., & Sadoon, I. O. A. (2010). Screening for blood lead levels in Basrah, Southern Iraq. *Qatar Medical Journal, 2010*(2), 15. https://doi.org/10.5339/qmj.2010.2.15

Navas-Acien, A., Guallar, E., Silbergeld, E. K., & Rothenberg, S. J. (2007). Lead exposure and cardiovascular disease: A systematic review. *Environmental Health Perspectives, 115*(3), 472–482. https://doi.org/10.1289/ehp.9785

National Museums Scotland. (n.d.). *The cultural significance of kohl in South Asian cultures*. Retrieved May 13, 2025, from https://www.nms.ac.uk/discover-catalogue/the-cultural-significance-of-kohl-in-south-asian-cultures

U.S. Food and Drug Administration. (2022). *Limiting lead in lipstick and other cosmetics*. https://www.fda.gov/cosmetics/cosmetic-products/limiting-lead-lipstick-and-other-cosmetics

U.S. Food and Drug Administration. (2024a). *Kohl, kajal, al-kahal, surma, tiro, tozali, or kwalli: By any name, beware of lead poisoning*. https://www.fda.gov/cosmetics/cosmetic-products/kohl-kajal-al-kahal-surma-tiro-tozali-or-kwalli-any-name-beware-lead-poisoning

U.S. Food and Drug Administration. (2024b, October 9). *Actions & enforcement*. https://www.fda.gov/industry/import-program/actions-enforcement

World Health Organization. (2024, September 27). *Lead poisoning*. https://www.who.int/news-room/fact-sheets/detail/lead-poisoning-and-health

Yazbeck, C., Thiebaugeorges, O., Moreau, T., Goua, V., Debotte, G., Sahuquillo, J., Forhan, A., Foliguet, B., Magnin, G., Slama, R., Charles, M.-A., & Huel, G. (2009). Maternal blood lead levels and the risk of pregnancy-induced hypertension: The EDEN cohort study. *Environmental Health Perspectives, 117*(10), 1526–1530. https://doi.org/10.1289/ehp.0800488

Zhu, M., Fitzgerald, E. F., Gelberg, K. H., Lin, S., & Druschel, C. M. (2010). Maternal low-level lead exposure and fetal growth. *Environmental Health Perspectives, 118*(10), 1471–1475. https://doi.org/10.1289/ehp.0901561