

The Hidden **Dangers** of Counterfeits

Undergraduate Research Summer Research Fellowship

This research aims to explain the potential risks associated with dupe, fake, replica, and counterfeit items. In addition to distinguishing between these types of products, the research will focus on the **psychological, legal, consumer, and health** implications of these items.

01. Definitions

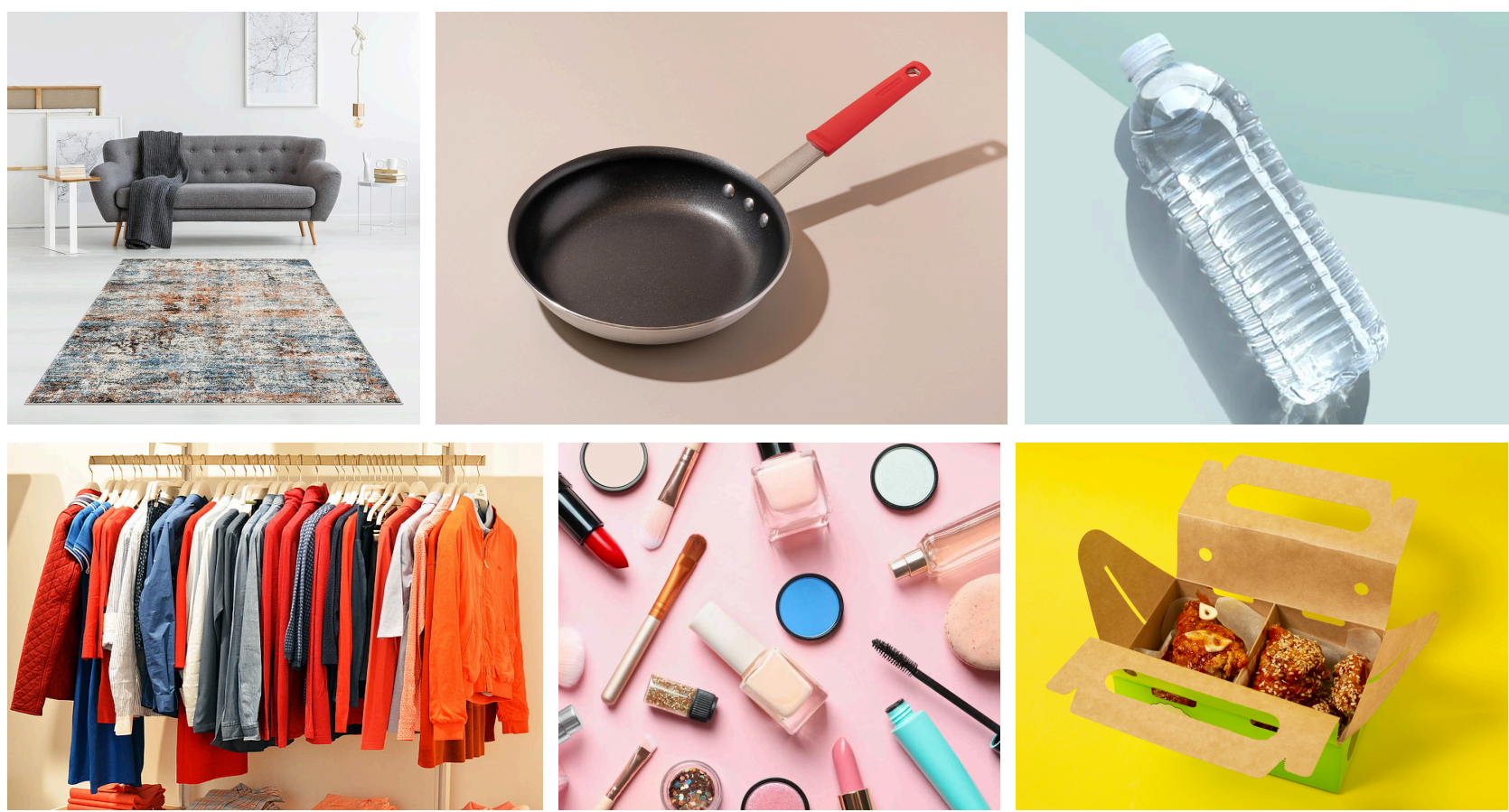
- **Fake**
 - Broad term; anything not authentic.
- **Dupe**
 - Doesn't claim to be original brand; cheaper replica.
- **Replica**
 - Openly acknowledged as a copy; direct copy.
- **Counterfeit**
 - Intentionally meant to deceive; direct copy.

PFAS?

Per- and polyfluoroalkyl substances (PFAS)

- Widespread.** There are nearly 15,000 different PFAS chemicals. "99% of humans have PFAS chemicals in their blood."¹
- Bioaccumulate.** PFAS chemicals accumulate the body over time. PFAS can enter the body through exposure when a person inhales, ingests, drinks, or touches them.²
- Consequences.** PFAS target the immune system, can cause cancer.¹
- "Forever Chemicals"** Carbon-fluorine bonds make PFAS hard to degrade.

¹ National Institute of Environmental Health Sciences: Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS).² National Institute of Environmental Health Sciences. <https://www.niehs.nih.gov/health/topics/agents/pfas/#:~:text=PFAS%20are%20group%20of,bioaccumulation>. Accessed 11 Sept. 2024.
² Understanding PFAS Exposure and Your Body | Per- and Polyfluoroalkyl Substances (PFAS) and Your Health | ATSDR. "Agency for Toxic Substances and Disease Registry." <https://www.atsdr.cdc.gov/pfas/health-effects/pfas-exposure-and-your-body.html>. Accessed 11 Sept. 2024.



04. Legal Perspective

- California **Assembly Bill 1200**, requires chemical labels in **cookware** and **food packaging**. (January 1, 2024).
- California **Assembly Bill 1817**, bans sale, manufacturing, and distribution of **textile goods**, that contain more than 100 ppm of total organic fluorine (January 1st, 2025) or more than 50 ppm as of January 1st, 2027.
- California **Assembly Bill 652**, prohibits the sale, manufacturing, and distribution of **juvenile products** containing PFAS above 100 ppm. (July 1, 2023).
- California **Assembly Bill 2771**, prohibits sale, delivery, or manufacturing of **cosmetic products** that contain "intentionally added" PFAS. (January 1, 2025)

- **0.5%** of the global chemical market is PFAS. (2022)
 - \$28 billion
- Estimated annual PFAS-related healthcare costs in Europe are €52-84 billion. (**\$57 - \$93 billion**)
- As of February 2024, DuPont agreed to **\$1.185 billion** settlement for the PFAS Contamination

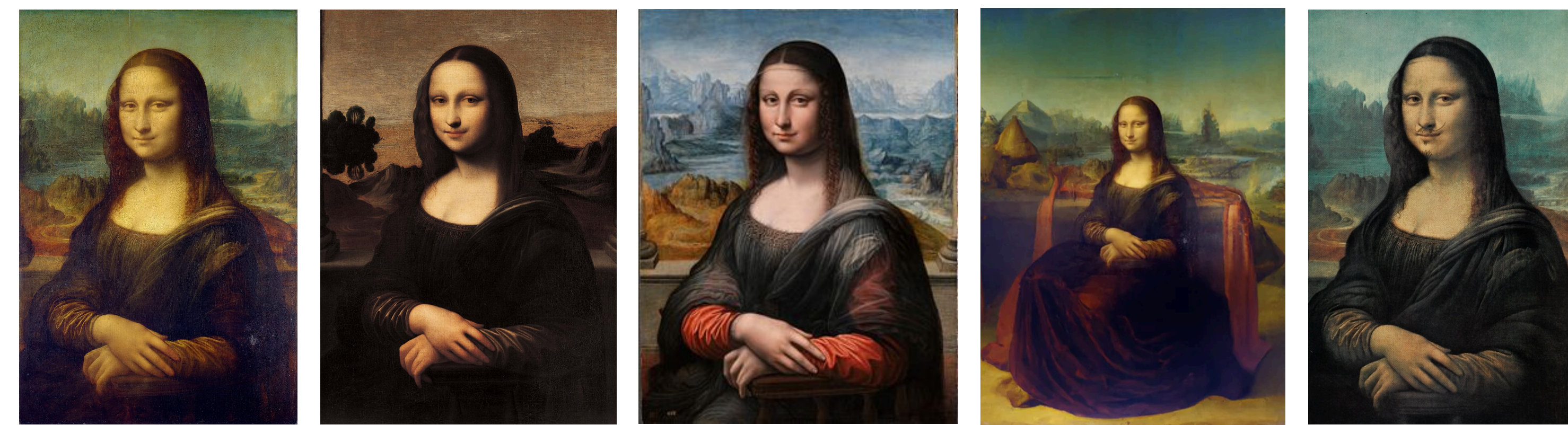


¹ "The Top 12 PFAS Producers in the World and the Staggering Societal Costs of PFAS Pollution." We Flip the Script on the Chemical Pollution Crisis. <https://chemsec.org/reports/the-top-12-pfas-producers-in-the-world-and-the-staggering-societal-costs-of-pfas-pollution/>. Accessed 11 Sept. 2024.

02. Historical Approach

Based on the book *Faking, Forging, Counterfeiting: Discredited Practices at the Margins of Mimesis (Culture & Theory)*.

FIVE LEVELS OF SEPERATION OF FORGERY



The 'Original' The Replica or Replication The Copy The pasticcio The stylistic imitation

The 'Fake'

Using the Six Degrees of Separation theory, translated onto art and forgery.

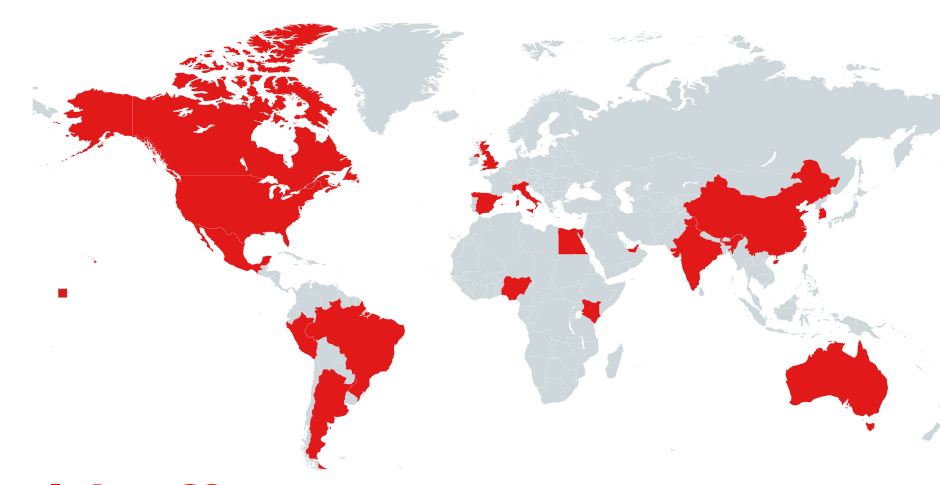
(Original piece of artwork made by original artist.)

1. **Replica.** The replica needs to be made by the original artist himself, of the original artwork.
2. The **Copy.** A copy is if the artist is redoing the original work is different from the original artist.
3. The **Pasticcio.** Pieces of the artwork will be taken from the original to form a new composition.
4. **Stylistic imitation.** A piece of artwork is stylistically distinct, in terms of artist manner.
5. The **Fake.** The copy can become a counterfeit, if it deceives in saying it's the original.

Historically fakes such as copies were a work of craftsmanship and art. A way to showcase and learn skills for apprentices.

03. Consumer Behavior Approach

- **74%** purchased counterfeits intentionally and unintentionally.¹
- **52%** of consumers purchase counterfeits intentionally.¹
- Self-reported counterfeit consequences included **10%** of **"Negative Health Effects"**¹
- Clothes **31%** and Handbags **18%** were the top counterfeiting categories.¹
- **39%** each tied for Social Media and E-retail platforms as top sources for counterfeit consumption.¹



¹ Alhabash, S., Kononova, A., Huddleston, P., Moldagaliyeva, M., & Lee, H. (2023). Global Anti-Counterfeiting Consumer Survey 2023: A 17 Country Study. East Lansing, MI: Center for Anti-Counterfeiting and Product Protection, Michigan State University. <https://a-capp.msu.edu/article/global-anti-counterfeiting-consumer-survey-2023/>

05. Chemical Testing

Dupe Purse Sample Photos



Authentic Purse

Numéro Dix
EDITION TEXTURED BLACK
\$580



Test Property	Testing Result Summary		Subject to Client's Approval	COMMENTS
	SAT	UNSAT		
Total Organic Fluorine (TOF)	PASS	FAIL	X	See Test Results Below
Lead Content	X			See Test Results Below

06. Conclusion

TEST RESULTS:

Total Organic Fluorine Content – Client's Requirement

Test Item	Result			Client's Requirement	Conclusion
	Total Fluorine (mg/kg)	Total Inorganic Fluorine (mg/kg)	Total Organic Fluorine (mg/kg)		
A8	220.8	<5	220.8	100	FAIL
A9	<10	<5	<10	100	PASS

ND= Not detected (Laboratory detection limit for TF =10mg/kg; for TIF = 5mg/kg – TOF is a calculated result)

Method: In-house method: Total Fluorine – Total Inorganic Fluorine = Total Organic Fluorine using CIC with reference to ASTM D7359 – 23 Standard Test Method for Total Fluorine – CIC and BS EN 14582-2016 (halogen).

Note: mg/kg = milligram per kilogram
"<" = less than

^{*}As of January 1, 2025, California's Assembly Bill 1817 (AB 1817) prohibits the manufacture, distribution, and sale of new textiles that contain more than 100 parts per million (ppm) of total organic fluorine (TOF). This includes textiles that contain intentionally added PFAS, or per- and polyfluoroalkyl substances." ("California's Approach to PFAS Regulation Creates Compliance Challenges | BakerHostetler")

PFAS-FREE Resources



Mamavation, independent blog, posting product investigations working alongside U.S. Environmental Protection Agency laboratories. Funded through donations, affiliate sales, etc.



Yuka, app scores food and cosmetics for additives bases scores off ingredients. Doesn't advertise or accept partnerships.



Oeko-Tex, prohibit intentional PFAS use, limit 100 ppm (January 1st, 2024).



Environmental Working Group, conducts research about chemicals in products. It is an independent non-profit organization; funded through donations.