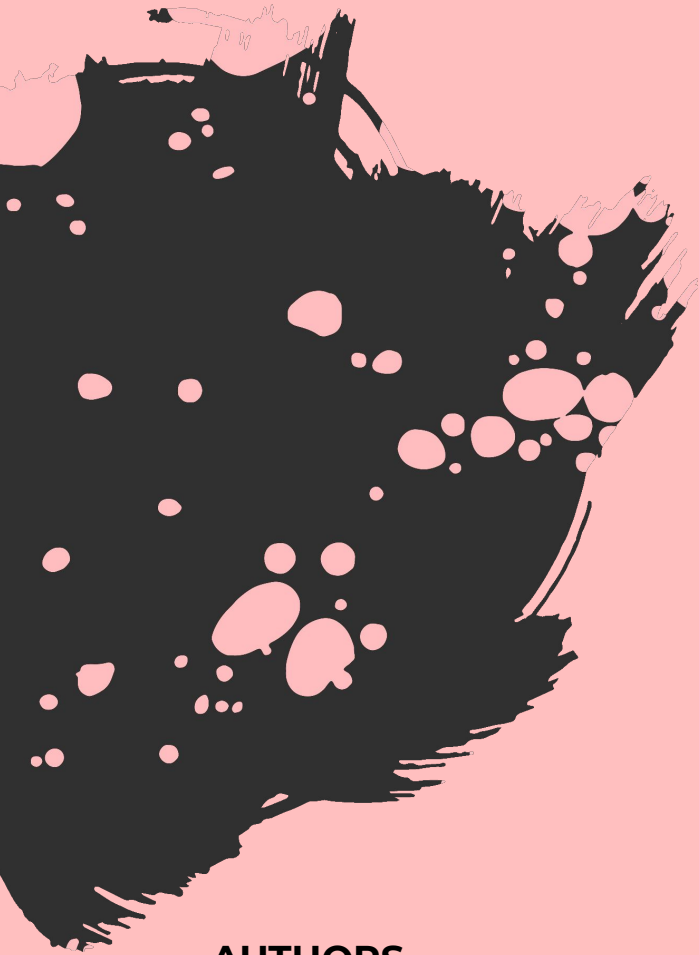


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SALON CHEMICALS



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2023

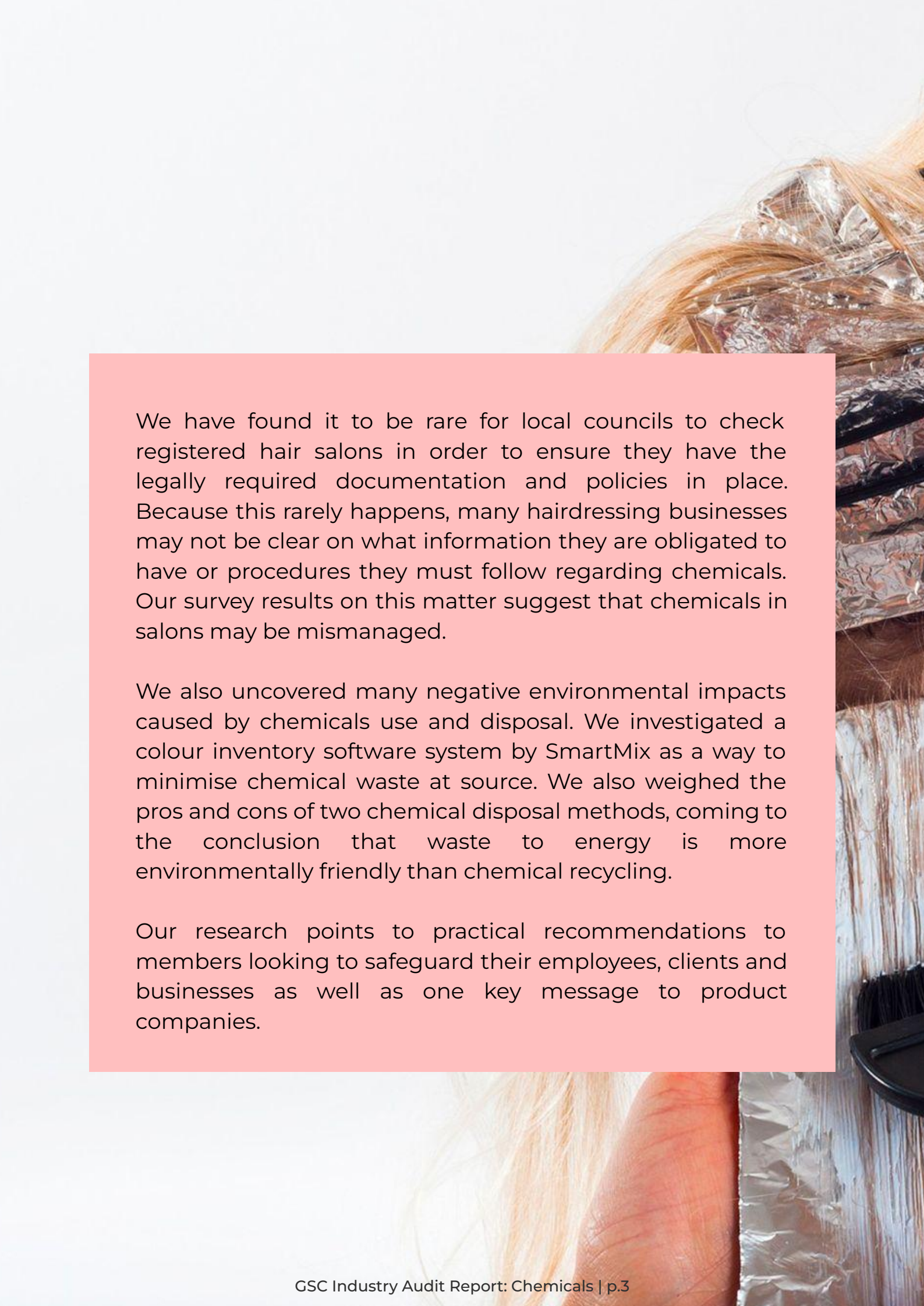
EXECUTIVE SUMMARY

This report summarises research on hairdressing chemical usage and waste in order to uncover opportunities to improve education and training for hairdressing and barbering professionals.

We found that typical professional hairdressing products commonly contain some very problematic chemicals such as ammonia, PPD and formaldehyde which are harmful for humans and the natural world. Some alternative products have made it to market, especially those that are ammonia- and PPD-free. However, very few chemicals found in traditional colour and bleach products have no alternative that are better for both human health and the planet *and* are equally effective.

Lack of regulation in the hairdressing industry means that once stylists have completed their college training, they are not obliged to refresh any health and safety elements nor prove they are competent. Some brands offer 'top up' health and safety classes but these are nonessential and indeed require time and effort. This lack of updated training or mandatory refreshers may put these professionals—and their clients—at risk.





We have found it to be rare for local councils to check registered hair salons in order to ensure they have the legally required documentation and policies in place. Because this rarely happens, many hairdressing businesses may not be clear on what information they are obligated to have or procedures they must follow regarding chemicals. Our survey results on this matter suggest that chemicals in salons may be mismanaged.

We also uncovered many negative environmental impacts caused by chemicals use and disposal. We investigated a colour inventory software system by SmartMix as a way to minimise chemical waste at source. We also weighed the pros and cons of two chemical disposal methods, coming to the conclusion that waste to energy is more environmentally friendly than chemical recycling.

Our research points to practical recommendations to members looking to safeguard their employees, clients and businesses as well as one key message to product companies.

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2.

INTRODUCTION

The general public may not be fully aware of the risks associated with hairdressing and barbering but these professionals certainly do or at least they learn this in compulsory health and safety training. Even some of the most basic hairdressing services require the use of products containing a symphony of chemicals and so require the use of gloves to prevent direct skin contact and aprons to protect clothing. Permanent and semi permanent colouring, Brazilian straighteners, chemical relaxers and more all pose risks to human and planetary health.

Green Salon Collective consists of a network of highly trained and experienced professionals operating in the hair and beauty industry. In this circle, it is common knowledge that hairdressing is a “risk profession” and among the top occupational health issues are contact dermatitis, skin allergies and asthma, all caused by exposure to chemicals. It is therefore of the utmost importance to be trained in the correct and safe handling of the products that cause these issues.

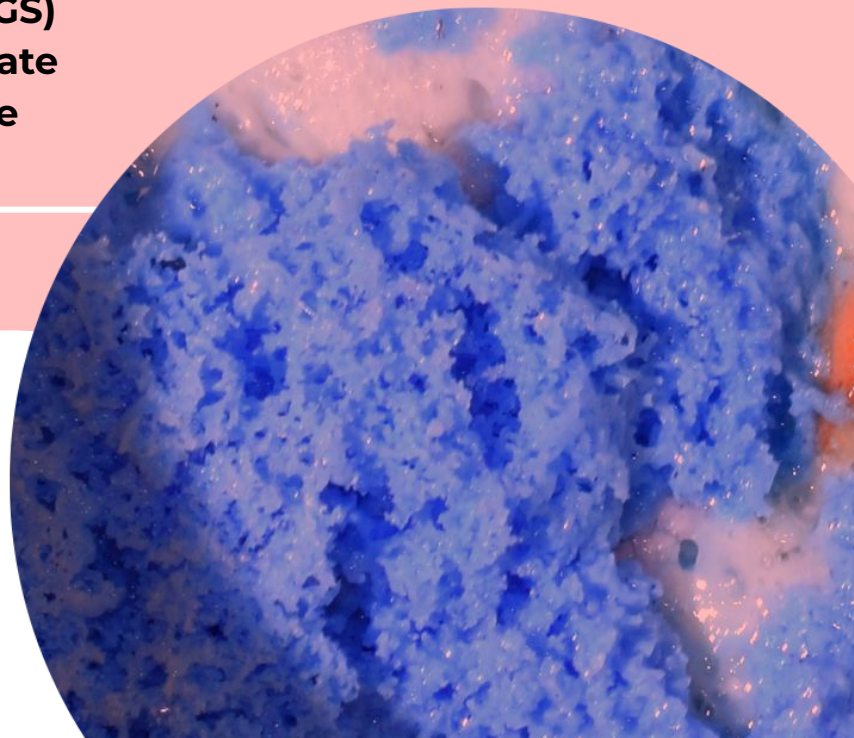
Consequently, we decided to conduct an objective investigation of salon chemicals both in their use and disposal phases. The bulk of our research is in the form of a literature review but this data is supported by surveys, interviews and primary quantitative data. Our two main goals for this research were to **1) determine the compositions and health effects of typical hairdressing chemicals as well as how these are being addressed in salons and training programs** and **2) determine the scale and causes of chemical waste along with available solutions.**


3. THE STUDY

a. SCOPE

One objective of the study was to gain a better understanding of the compositions and health impacts of typical hairdressing chemicals. A poll revealed the top brands, **L’Oreal, Oway, FFOR, Davines and Wella Professionals**, being used for temporary hair colouring, semi-permanent dyes, permanent colouring and bleaching. We used the ingredients lists of the top products by these brands to perform a literature review on chemical composition and health impacts of those ingredients. We limited a discussion of health factors to the following key ingredients:

- **Ammonia**
- **Hydrogen peroxide**
- **P-Phenylenediamine (PPD)**
- **Ethanolamine**
- **Polyethylene glycols (PEGs)**
- **Toluene-2,5 Diamine Sulfate**
- **Ammonium Thioglycolate**
- **Formaldehyde**





In addition to human health impacts, we also noted impact on:

- **Marine life**
- **Landfill**

Related to the above, we also investigated exactly how health and safety is being addressed in standard practices, education and training. We explored:

- **Use of PPE (e.g. masks and gloves)**
- **Minimum standards (e.g. COSHH)**
- **Training (e.g. post-college)**
- **Culpability (e.g. who is responsible for worker safety?)**
- **Audits and inspections**
- **Alternative services and products**

The second objective of the study was to determine the causes and volumes of hairdressing chemical waste. Data on actual collected chemical waste was calculated for:

- **Average salons and hairdressers**
 - **The UK**
- 

b. METHODS

Polling. We acquired data from hairdressing professionals using a polling feature on social media (Instagram via **@greensaloncollective**). We first asked which specific products were being used to perform typical procedures like permanent colouring. We received 25 responses and this information was used to conduct targeted research on the chemical profile of common products being used in the industry. In our next poll we asked for estimates on how many colour services were being performed by salons in a week and in a month. We received 8 responses and this information was used to strengthen our chemical waste estimates.

Desk Research. We carried out desk research to better understand the composition of typical professional hairdressing products as well as their health impacts. One major source of information was **Cosmeticsinfo.org** which is a “comprehensive, informational database containing science and safety information on cosmetics and personal care products – how they work, data to corroborate safety and science behind commonly used ingredients. Developed and maintained by scientists and subject-matter experts.”

We also were given privileged access to paid-for Health & Safety Guidelines documents from the National Hair & Beauty Federation (NHBF). Whilst we could not hope to share proprietary content, we were able to understand whether the provided information addressed the health and safety concerns our own research was uncovering.

Lastly, we made use of publicly available information such as ingredients lists and health and safety documents like safety data sheets (SDSs). Manufacturers and importers of products containing hazardous chemicals are required to prepare SDSs which describe the physical and chemical properties of the materials and products. These often include information about the safe supply, handling and use of chemicals to prevent harm to users and the environment.

Survey. We sent out a survey on workplace health and safety via Green Salon Collective's Newsletter and social media (Instagram @greensaloncollective). The survey consisted of 22 questions (view it [here](#)) and we received 26 responses from salon owners (84.6%), freelancers (7.7%) and hairdressers or barbers (7.7%) with varying degrees of expertise and coming from various sized businesses. As part of the survey we asked how professionals disposed of chemical waste and this information was used to gain a better understanding of the extent of pollution caused by chemical waste.

Interviews. We conducted three interviews with salon owners and product company owners to learn more about chemical ingredients and to collect anecdotal evidence for their use, health and safety precautions and possible alternatives. General health and safety was also discussed. The first interview was on 4 October 2022 with **Victoria Tarrant, owner of Smartmix and Precision Colour**. The second was on 2 November 2022 with **Lacey-Hunter Felton, owner and CEO of Hunter Collective**. The third was on 14 November 2022 with **Tabitha James Kraan, owner of Tabitha James Kraan**. Some interviews were followed up with questions by email. We also interviewed **Caroline Larrissey, Director of Quality and Standards for NHBF**, to learn more about health and safety education and training.

Colour Research Data. We were given privileged access to research data conducted by SmartMix, a colour inventory app. We combined this information with empirical data from Green Salon Collective's own chemical collections in 2021, over a 3 month period across 377 salons. These two data sources allowed us to arrive at more accurate averages for colour waste.



C. FINDINGS

Polling. We found that the most common colouring products being used by professionals were from the following brands:

- L'Oreal (Majirel Absolu)
- Oway (Hcolor)
- FFOR
- Davines
- Wella Professionals

From our second poll we found that salons were typically performing approx. 158 colour services in a week and approx. 684 in a month.

In our survey, half the respondents reported they put chemicals down the drain and half (separate question) disposed of their chemical waste with Green Salon Collective.

Desk Research. Using the results from our polling and other sources we compiled ingredients lists from the following top-selling professional products:

Product	Ingredients
<i>Temporary hair colouring, semi-permanent dyes, permanent colouring or bleaching</i>	
L'Oreal Professionnel - Permanent Hair Color - Majirel Absolut	Aqua/water, Cetearyl Alcohol, Oleth-30, Hexadimethrine Chloride, Ammonium Hydroxide, Oleic Acid, Oleyl Alcohol, 2,4-Diaminophenoxyethanol Hcl, P-Aminophenol, M-Aminophenol, Sodium Metabisulfite, Ethanolamine, 6-Hydroxyindole, Thioglycerin, 2,5-Diamine, Ammonium Thiolactate, 2-Methyl-5-Hydroxyethylaminophenol, Pentasodium Pentetate, Benzyl, Alcohol, 2-Oleamido-1, 1,3-Octadecanediol, Resorcinol
Oway Hcolor 3.0 Natural Dark Brown - Permanent Hair Colour	Aqua/water, Cetearyl Alcohol, Cocomidea MEA, Stearic Acid, Glyceryl Stearate, Ethanolamine, Propylene Glycol, Perilla Seed, Oil**, Hydrolyzed Cottonseed Protein*, Hydrolyzed Wheat Protein*, Jojoba Seed Oil*, Hibiscus Flower Extract**, Date Seed Oil*, Ascorbic Acid, Citric Acid, C12-13 Alkyl Lactate, Di-C12-13 Alkyl Malate, Tridecyl Salicylate, Di-C12-13 Alkyl Tartrate, Tri-C14-15 Alkyl Citrate, Sodium Hydrosulfite, Tetrasodium EDTA, Sodium Benzoate, Potassium Sorbate, Polyquarternium-22, Parfum, p-Phenyldiamine, p-Aminophenol, m-Aminophenol, Toluene 2,5 Diamine Sulfate, 4-Choloresorcinol, N-Phenyl-p-Phenyldiamine, 2-methylresorcinol, Resorcinol, 1,5-Naphthalenediol, 2,4 Diaminophenoxyethanol Hcl, Oxyquinoline Sulfate, 1-Naphthol, 4-Amino-2-Hydroxytoluene, N,N-Bis (2-Hydroxyethyl)-p-Phenyldiamine Sulfate
Developer - 20 Vol (6%) - FFOR	Aqua/water, Hydrogen Peroxide, Cetearyl Alcohol, Vitis Vinifera (Grape) Seed Oil, Bertholletia Excelsa (Brazil Nut) Seed Oil, Oleamide DEA, Glycerin, Cetearth-30, Acetic Acid, Sodium Salicylate, Disodium Pyrophosphate, Sodium Stannate, Phosphoric Acid
Pearl Toner - FFOR	Aqua/water, Cetearyl Alcohol, Stearic Acid, Glyceryl Stearate, Ethanolamine, Glycerin, Cocamide MEA, Vitis Vinifera (Grape) Seed Oil, Oleth-5 Phosphate, Oleic Acid, Sodium Metabisulfite, Bertholletia Excelsa (Brazil Nut) Seed Oil, Dioleyl Phosphate, Erythorbic Acid, Sodium Stearate, Methyl Hydroxyethylcellulose, Parfum (Fragrance), Limonene, Tetrasodium EDTA, Phenoxyethanol, Toluene-2,5-Diamine, m-Aminophenol, 2-Amino-3-Hydroxypyridine, 2,4-Diaminophenoxyethanol HCL
Davines Bleach	Potassium Persulfate, Sodium Silicate, Sodium Persulfate, Hydrated Silica, Cyamopsis Tetragonolobus Gum / Cyamopsis Tetragonoloba (Guar) Gum, Sodium Stearate, Sodium Metasilicate, Paraffinum Liquidum / Mineral Oil / Huile Minérale, Silica, Magnesium Carbonate, Cyclodextrin, Tetrasodium Edta, Sodium Lauryl Sulfate, Xanthan Gum, Ci 77007 / Ultramarines
<i>Chemical relaxers, texturisers, perms or keratin treatments</i>	
Perm Creatine+ Curl (N) 75/250ml Kit - Wella Professionals	Aqua/Water, Ammonium Thioglycolate, Ammonium Bicarbonate, Urea, Butylene Glycol, Coceth-10, Ethoxydiglycol, Peg-35 Castor Oil, Propylene Glycol, Creatine, Fragrance/Parfum, Panthenol, Ammonia, Polyquaternium-6, Geraniol, Citronellol, Farnesol, Hydrolyzed Silk, Phenoxyethanol, Potassium Sorbate, Sodium Methylparaben, Disodium EDTA, Methylparaben Ethylparaben, Butylparaben, Propylparaben Neutralizer: Aqua, Hydrogen Peroxide, Propylene Glycol, PEG-35 Castor Oil, Laureth-4, PEG-40 Hydrogenated Castor Oil, Coco-Betaine, Phosphoric Acid, Creatine, Polyquaternium-35, Salicylic Acid, Sodium Cocoamphoacetate, Benzoic Acid
Brazilian Blowout Original Smoothing Solution (professional)	Aqua/water, Methylene Glycol (formyldehyde), Cyclopentasiloxane, Cetearyl Alcohol, Benetriunium Methosulphate, Fragrance (parfum), Acai Palm Fruit Extract, Glycerin, Anatto Seed Extract, Camu Camu Fruit Extract, Limonene, Linalool, Hexyl Cinnamel, Butylphenyl Methylproponal, Benzyl Benzoate, Ci 15985, Ci 19140
<i>Sanitisation or sterilisation products</i>	
Barbicide	Propan-2-ol, Benzyl C-12-16 Alkyldemethyl, Chlorises (BAC 50), Sodium Nitrate, Tetrasodium EDTA, Isopropyl alcohol, Dimethyl benzyl ammonium chloride

Continued:

	Aqua/Water, Ammonium Thioglycolate, Ammonium Bicarbonate, Urea, Butylene Glycol, Coceth-10, Ethoxydiglycol, Peg-35 Castor Oil, Propylene Glycol, Creatine, Fragrance/Parfum, Panthenol, Ammonia, Polyquaternium-6, Geraniol, Citronellol, Farnesol, Hydrolyzed Silk, Phenoxyethanol, Potassium Sorbate, Sodium Methylparaben, Disodium EDTA, Methylparaben Ethylparaben, Butylparaben, Propylparaben Neutralizer: Aqua, Hydrogen Peroxide, Propylene Glycol, PEG-35 Castor Oil, Laureth-4, PEG-40 Hydrogenated Castor Oil, Coco-Betaine, Phosphoric Acid, Creatine, Polyquaternium-35, Salicylic Acid, Sodium Cocoamphoacetate, Benzoic Acid
	Aqua/water, Methylene Glycol (formyldehyde), Cyclopentasiloxane, Cetearyl Alcohol, Benetriunium Methosulphate, Fragrance (parfum), Acai Palm Fruit Extract, Glycerin, Anatto Seed Extract, Camu Camu Fruit Extract, Limonene, Linalool, Hexyl Cinnamel, Butylphenyl Methylproponal, Benzyl Benzoate, CI 15985, CI 19140
<i>Sanitisation or sterilisation products</i>	
	Propan-2-ol, Benzyl C-12-16 Alkyldemethyl, Chlorises (BAC 50), Sodium Nitrate, Tetrasodium EDTA, Isopropyl alcohol, Dimethyl benzyl ammonium chloride



From the above and other sources we compiled a list of health issues caused by problematic ingredients commonly contained within professional haircare products:

Chemical	Notes on health	Source
Ammonia	a PH adjuster that allows colour to be imparted onto the hair by opening the hair cuticles, there is evidence that contact with skin can cause irritation, and vapours can be harmful to affect the lungs, sinuses, throat and eyes.	Cosmetics info.org
Hydrogen peroxide	helps to initiate the colour-forming process and create longer-lasting colour. It can cause a rash or allergic reaction (sensitising), and inhalation can be harmful to the lungs.	Pubmed
PPD (p-phenylenediamine)	imparts colour onto the hair, however it is a strong skin sensitiser and causes allergic reactions. There is conflicting evidence for it being a carcinogen, and there's the potential for a mutagenic (DNA changing) substance being created when mixed with Hydrogen Peroxide.	Safe Cosmetics .org
Ethanolamine	typically used as an alternative to ammonia, as it opens the hair cuticle to allow colour to diffuse. There is some evidence that it may increase the risk of birth defects.	Cosmetics info.org
PEGS (polyethylene glycols)	can cause sensitization and irritation on damaged skin. Depending on the size of the PEGS, can act as a penetration enhancer (increases the ability of some molecules to cross the skin barrier, potentially increasing dosage).	Simply Organic Beauty
Toluene-2,5 Diamine Sulfate	works to impart colour onto hair, it is a mild eye irritant and skin sensitiser.	Cosmetics info.org
Ammonium Thioglycolate	commonly used in straightening or perming services, as it changes the texture of hair, but may be irritating to skin	Cosmetics info.org
Formaldehyde	used in hair straightening treatments, like a Brazilian Blow Out. It can be irritating to skin, sensitising and inhalation can cause irritation to sinuses, throat and lungs. There's some evidence suggesting it's a carcinogen when exposed for long periods of time, or to an unusually high concentration. Methylene Glycol releases formaldehyde gas when heat is applied.	Cancer.org
Barbicide	Sodium Nitrate is very toxic to aquatic life. According to the UK government and the WHO, the volatile organic compounds (VOCs) contained within Barbicide cause "irritation of the eyes and respiratory tract, allergies and asthma, central nervous system symptoms, liver and kidney damage, as well as cancer risk."	UK gov

We also compiled some notes on environmental impacts.

Firstly, all of the above chemicals are hazardous to marine life and many are extremely toxic.

None of them should be washed down the drain or allowed to go into the water system. Whilst your wastewater will be treated by treatment plants, not all chemicals can be filtered out and so will be flushed into waterways like rivers and oceans. Even if they're diluted by large bodies of water, these harmful substances can accumulate and cause harm to marine life.

Per the UK Government's guidelines, liquid waste should not go to landfill, as well as waste that would be explosive, corrosive, oxidising, flammable or highly flammable. Hazardous waste (i.e these listed chemicals) must be treated before going to landfill. If chemicals have been filtered out as a sludge or naturally form a semi-solid sludge, this is allowed to go to landfill as it's not a liquid anymore. However, some hazardous waste can be sent to landfill if the waste companies get permission. There are several effects that chemical-ridden landfills have on the planet, putting both human and planetary health at risk.

Governmental guidance specific to Barbicide is given:

- **Do not discharge into drains or rivers. Contain the spillage using bunding.**
- **H400: Very toxic to aquatic life**
- **H410: Very toxic to aquatic life with long lasting effects**
- **H411: Toxic to aquatic life with long lasting effects.**
- **Not tested for Bioaccumulative potential**
- **The product should not be allowed to enter drains, water courses or the soil. Dispose of as hazardous waste in compliance with local and national regulations.**

In light of what we learned about typical products and their health effects, we were curious to learn about alternative products and services that could keep workers and clients safe. Several alternatives are available to professionals which are especially beneficial for those who are or have become allergic to hair dye, typically PPD.

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Alternative product	Notes
Plant-based colouring	Utilises plants and not typical hairdressing chemicals, and so is safe for people allergic to hair dye (typically PPD)
Mineral highlighting	Utilises clay to lighten up to 6 shades, without traditional hairdressing chemicals
Henna	PPD-free and so safe for people who are sensitised to PPD or hair dye. Formulated with plant ingredients and typically without traditional hair colour chemicals. Doesn't damage hair in the same way as traditional hair colouring chemicals can. PPD is present in 'black henna' and should be avoided due to risk of allergic reactions. Can be harder to achieve desired results due to lack of /bleach and dependent on the type and style of hair.
Ammonia/PPD-free products	There are several brands on the market (e.g. Natulique or Gentle Hairdye) which have ammonia- and/or PPD-free alternatives. They can be more suitable for people with allergies, as well as limiting exposure to chemicals overall. However, they do still contain some of the aforementioned chemicals (like Toulene -2,-5 Diamene) and are not fully plant-based or chemical free.

We learned some interesting facts regarding occupational health and safety.

According to the [Health and Safety Executive](#) in the UK, up to 70% of hairdressers suffer from work-related skin damage like dermatitis during their career.

This is typically caused by overexposure to water, soap and chemicals. There were several scientific studies investigating PPE and glove use within the hairdressing industry and the impact of chemical exposure. Here are some key quotes:


“Hairdressers’ attitudes towards the use of protective equipment: Among the 28 hairdressers investigated, 93% reported using protective gloves and at the same time 28.6% of these subjects reported using aprons. The remaining 7% did not use any type of protection. Investigations revealed that 39% of the subjects presented a skin disorder and 11% presented respiratory symptoms. It was interesting to note that during the interviews some hairdressers reported using protection, but observations revealed that they did not in fact use protection (Table 3). For example, worker 8A declared in the survey to use gloves during hair coloring. However, during observations worker 8A wore gloves during the first application of mixtures but not during the second application.

Other poor practices consisted in sharing and reusing gloves as well as the use of jewellery during tasks. Results from surveys showed that 55% of workers with skin disorders reuse their gloves and 27% share their gloves. Among the population with skin disorders, 64% have less than 8 years of professional experience.” ([Ramirez-Martinez et al., 2016](#))


“The results of the present review imply that an assumed frequency of use for consumers is not suitable for representing exposure—and with it, morbidity risk—of hairdressers. Higher exposure leads to a greater risk of skin irritation and sensitization, which consequently also has ramifications regarding systemic exposure via skin. The regulations in force do not adequately address the occupational dangers linked with the use of cosmetic products in hairdressers. A rethinking of present risk assessment practices should be prompted.” ([Symanzik et al., 2022](#))

According to the legal guidelines, as confirmed by the NHBF, there are several minimum health and safety standards that hairdressing businesses must adhere to:

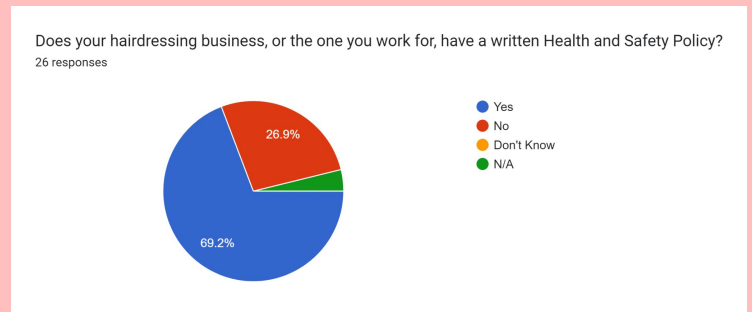
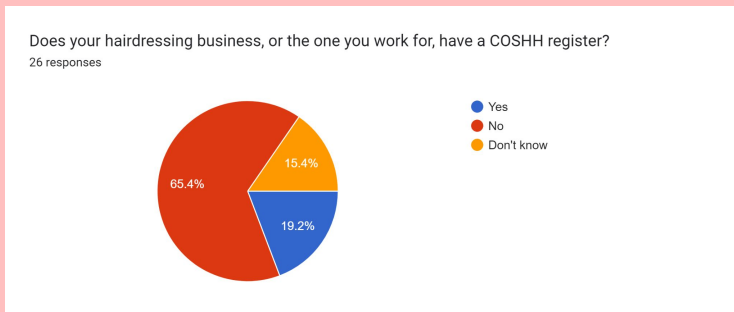
- COSHH (Control of Substances Hazardous to Health) is a register of all the chemicals in the salon (like bleach and colour, but also cleaning chemicals) which must be listed on a register with each health and safety instruction and potential risks.
- **Freelancers are independent contractors so they must have their own COSHH registers and risk assessments. They are responsible and have to be individually insured too.**
- Risk assessments legally have to be written down if you have more than five employees. However, you still need to have a risk assessment with less than five employees, and it's best practice to have that written down. It should cover anything that can cause harm or has risk in the salon, including chemicals.
- You must have a health and safety policy written down if you have more than five employees, but again it's best practice to have one anyway.
- Colour allergy testing 48 hours in advance for clients.
- Staff colour testing, to ensure an allergy is not developed due to exposure.
- Accident and spill logs
- First aid kits



We also uncovered a number of best practice standards that are not legally required but worthwhile listing here:

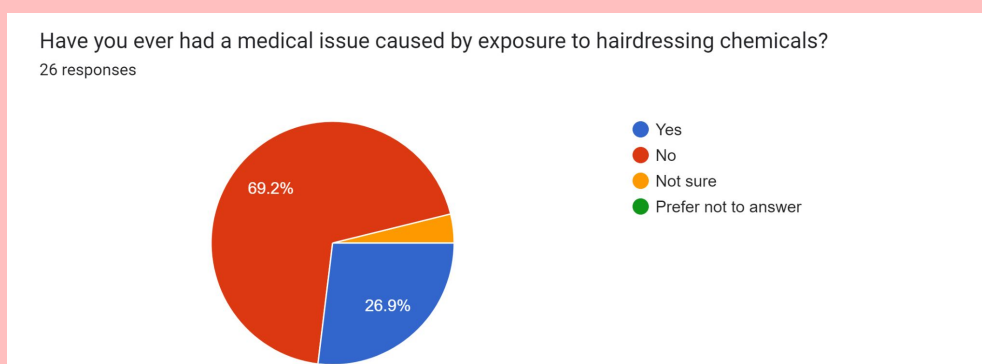
- **PPE best practises involving gowning, gloves and barrier creams**
 - **H&S Training is a mandatory module in all UK qualifications (but stops there)**
 - **Hairdressing isn't a regulated industry; the main requirements are from HSE or general legislation and insurance**
 - **Since hairdressers only need to get insurance, they're not required to prove their credentials to anyone (or that they're from the UK, where the H&S is mandatory), however our primary research determined that insurers did ask about qualifications and studies**
 - **If hairdressers are a member of a trade union like the NHBF, they sign a Code of Conduct which contains all the required health and safety practises they must adhere to to remain a member**
 - **Chemicals must (safely) be used for sterilising and cleaning salon tools like scissors**
 - **Chemicals must be stored away from clients and according to the packaging**
- 

Survey. We learned that while most (69.2%) of hairdressing businesses have a written health and safety policy, **most (65.4%) respondents said they did not have a COSHH register.**



100% of respondents reported they use gloves when mixing colour. Only 15% of respondents said that they felt that the correct H&S procedures happened 100% of the time in their businesses, with the majority (69.2%) choosing either 8 or 9 out of 10. Overall, 73.1% were confident with their businesses H&S practises on the whole, and the other 26.9% were 'somewhat' confident. Most (76.9%) respondents were confident with their own health and safety, with the remaining (23.1%) choosing either 'maybe' or 'somewhat'. Nearly half (46.2%) of the respondents did not do training upon joining their current salon, with their previous experience counting. On the other hand, 38.5% reported they did undergo salon-specific training upon joining.

Worryingly, over a quarter (26.9%) of the respondents said that they had obtained a health issue or injury due to their occupation as hairdressers or barbers. Five (18.5% of those who obtained a health issue) of those responses were dermatitis on the hands, one was PPD allergy from overexposure and two had other health issues due to chemical exposure.




Interviews. Victoria Tarrant, owner of SmartMix, uncovered a number of alternative products worth mentioning here:

- [Mask with Vibrachrom | for Professionals - Davines Australia](#)
(ammonia-free)
- [INOA Hair Color - L'Oréal Professionnel Salon Hair Color](#)
(ammonia-free)
- [Carlo Oliveri products](#) (ammonia- and PPD-free)
- [Wella Koleston Perfect Me+ Permanent Color | Wellastore](#)
(PPD-free)

Lacey Hunter-Felton, owner of Hunter Collective, shared the ins and outs of health and safety from the perspective of a co-working space serving freelance hairdressing and barbering professionals. Like any business, her spaces are audited for safety, for example checking for the presence and placement of fire extinguishers, ventilation, capacity, exits, etc. Members of her space are also required to sign off on health and safety “House Rules” and are guided through everything during in-person introductions.

There are also differences in health and safety responsibility. Occupational well-being is the responsibility of individual members, usually covered through personal liability insurance. On the other hand, injuries due to tripping at the co-working space are the responsibility of Hunter Collective. Lacey summarises: “Who is responsible for what is very clear to everyone, particularly made clear in their Code of Conduct contract that is agreed on and signed upon when they become members.”



Tabitha James Kraan, owner of Tabitha James Kraan, also discussed the many benefits of working with Alice England, a brand with PPD, henna, alcohol and ammonia free professional products.

Caroline Larissey, Director of Quality and Standards for NHBF, started by listing typical occupational illnesses related to hairdressing and ways to prevent them which more or less echoes what we found in our desk research. It is worth highlighting which chemicals **NHBF recommend salons avoid using: Brazilian straighteners and chemical relaxers.** She noted that lots of guidance came out covid in terms of ventilation in hairdressing establishments: salon layout, entry routes, managing appointments and spreading colour services throughout the day to limit overlap of chemical services.

In terms of compliance, she also noted that complaints can trigger an inspection from Environmental Health Officers (which can also be random but that is rare) who look at their legal requirements for health and safety. In addition, some local councils have a registration where salons must sign up and can be audited through that, but this varies across the UK. She also mentioned that Turkish barbers contact the NHBF a lot regarding environmental health inspections as their training is usually different so they may not be following the health and safety laws or protocols that are expected.

Caroline admitted that beyond training in college there are few resources offered to stylists and owners regarding health and safety. Importantly, no such education or training is legally required. This is precisely why the NHBF offers a toolkit for salons to 'top up' their knowledge and make sure they're meeting minimum required legal standards. After gaining exclusive access to their toolkit, we can officially recommend it to salons, barbershops and freelancers as a way to safeguard themselves and their businesses.

Data on waste. From Green Salon Collective waste collection data, we estimate that 1.9kg of chemicals are wasted each month. This includes both colour and any mixers or activators used like bleach. Taking the average, **that's approximately one week of chemicals every month that is wasted** and 26% of all chemicals used. From reviewing data from our partner, SmartMix, we learned that salons waste 20% of colour on average, with some salons wasting more than 50% a month before intervention. This is in part due to over-mixing but mainly due to using more product than is needed.

Green Salon Collective averages estimate that 85.3kg of chemicals are used per salon each year and 22.9kg of that is wasted, costing the salon over £2500 a year (depending on their product brand). SmartMix's data estimates that 20-50% of colour is wasted annually, depending on the salon.

Interventions to reduce colour waste can help these businesses save thousands of pounds per year.

One such intervention is the SmartMix system which calculates the proportion of colour precisely needed for specific clients. This not only makes colour mixing more straightforward but it also helps to eliminate colour wastage due to overmixing. One salon saved over £16,000 a year by reducing the amount of colour waste they generate with a SmartMix trial. Similar technology like yuv offers refillable colour tubes and a formulating and dispensing machine that can help reduce colour waste by up to 35%.

According to the NHBF website, there were approximately 27,045 hair salons across the UK in 2021. By taking our average chemical waste figure of 1.9kg per month, we can calculate that over 606 tonnes of chemicals are being wasted annually, out of the 2,400+ tonnes generated overall. A quarter of all colours, mixers and activators figuratively and sometimes, sadly, literally down the drain.

Our research into chemical waste encouraged us to take a position on chemical waste recycling. Chemicals are spun in a centrifuge and then grey water is recovered and chemical sludge separated out. The sludge still needs to be transported to a waste to energy facility adding an extra, energy-intensive step to the process. After speaking with industry professionals, we determined that due to the water availability in the UK and the energy needed to undergo the recycling process is not worth the resources expended to arrive at the 'recycled' products.

Waste to energy services are the best solution that we have found that allows chemical waste to be kept out of landfill and allows energy to be generated for the national grid, rather than going to waste. One key drawback about waste-to-energy incineration is that good, clean facilities are incredibly expensive to build, especially those that are effective at capturing the pollutants released in the process; however we believe that the benefits outweigh the negatives when it comes to chemicals.

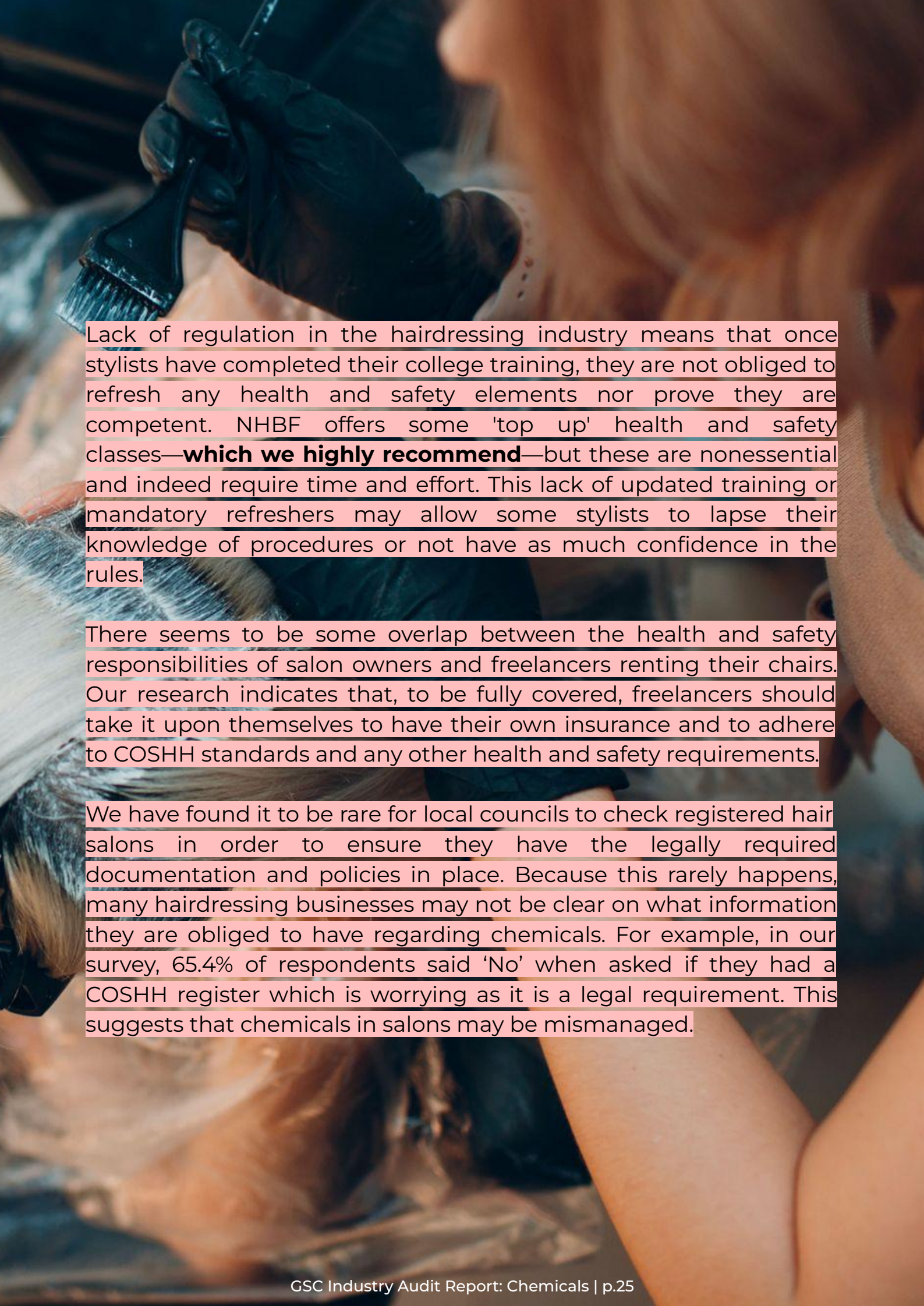
4.

KEY INSIGHTS

Health & Safety. Typical hairdressing products commonly contain some very problematic chemicals such as ammonia, PPD and formaldehyde which are harmful for humans and the natural world. Brands are picking up on this, albeit slowly, and some offer alternative products, especially those that are ammonia- and PPD-free.

However, many chemicals found in traditional colour and bleach products have no alternatives that are a) better for both human health and the planet *and b)* are equally effective.

Luckily, many of the potential effects of those chemicals can be mitigated through good ventilation, correct PPE, limited skin exposure and by not putting chemicals down the drain, as they are all highly toxic to marine life.



Lack of regulation in the hairdressing industry means that once stylists have completed their college training, they are not obliged to refresh any health and safety elements nor prove they are competent. NHBF offers some 'top up' health and safety classes—**which we highly recommend**—but these are nonessential and indeed require time and effort. This lack of updated training or mandatory refreshers may allow some stylists to lapse their knowledge of procedures or not have as much confidence in the rules.

There seems to be some overlap between the health and safety responsibilities of salon owners and freelancers renting their chairs. Our research indicates that, to be fully covered, freelancers should take it upon themselves to have their own insurance and to adhere to COSHH standards and any other health and safety requirements.

We have found it to be rare for local councils to check registered hair salons in order to ensure they have the legally required documentation and policies in place. Because this rarely happens, many hairdressing businesses may not be clear on what information they are obliged to have regarding chemicals. For example, in our survey, 65.4% of respondents said 'No' when asked if they had a COSHH register which is worrying as it is a legal requirement. This suggests that chemicals in salons may be mismanaged.

Chemical waste. The most sustainable solution for chemical waste is to prevent it becoming waste.

Whether the root cause of your salon's chemical waste is over-mixing or over-applying, you can have a big environmental impact by changing your mindset and process. Colour inventory software systems like **SmartMix** and **yuv** are a great way to get a handle on colour usage and can save salons money. Lots of money.

When colour waste cannot be avoided, it is crucial that it not be poured down the drain.

Chemicals in permanent and semi permanent colouring are harmful for both people and wildlife and can pollute the environment. General waste to energy services are a preferred alternative for chemicals and any contaminated waste. We found sending chemical waste for recycling to be more environmentally unfriendly than waste to energy, especially because of the energy requirements to transport, spin in a centrifuge and burn remaining sludge. Whilst waste to energy isn't a perfect solution, it is a more resource efficient way of preventing chemicals from going to landfill or in waterways.

5.

RECOMMENDATIONS

We have compiled a short list of practical recommendations and guidelines based on our findings in this study. For members (hair salons, barbershops and freelancers) wishing to safeguard their employees, clients and selves as well as the environment, we appreciate that every business is different and has its own set of unique circumstances which will factor into decisions and plans for change.

Members.

Ensure that all legal requirements (e.g. COSHH) are being met and that you have the proper insurance coverage.

Check whether you have sufficient ventilation and consider how the arrangement (time and physical space) of chemical services might increase the risk of inhalation.

Ensure gloves are always used when working with colour—then dispose of them in the most eco-friendly way: compost if compostable and waste to energy if contaminated.

Ingredients to avoid.

Formaldehyde is commonly found in brazilian blowouts and keratin treatments, and can be toxic when heat is applied. If you offer these services, try to find ones free of formaldehyde or in lower quantities, and ensure that the salon has good ventilation.

High levels of PPD as they can cause sensitisation in yourself and clients.

Ethanolamine as an alternative to ammonia. We know more about the impacts of ammonia as Ethanolamine is a newer alternative so be cautious with 'ammonia-free' products as they likely contain other chemicals, potentially equally harmful, to compensate.

Chemical use and waste.

Never put chemicals down the drain or in a bin destined for landfill. Ensure that they're taken care of in the most environmentally friendly way, like with waste to energy services.

Prevention is the solution. Waste to energy should be a last resort. Changing your mindset to use less colour whilst achieving the same performance and not over mixing is key to reducing overall waste.

By experimenting with using lower levels of colour and chemicals in colour services (e.g. more blended services like a balayage), you may realise that you can achieve the same results with less chemical usage which is better for your health, your clients' health, the planet and your bottom line.

Creating colour designs which last a few weeks longer in between sessions can reduce your clients' and your own exposure to chemicals.

Chemical waste audit and roadmap.

Spend a few weeks measuring the amount of chemical waste that your salon generates by collecting it in a chemical-specific bin rather than washing it down the drain.

At the end of 4 weeks, weigh the amount of chemical waste and calculate the financial cost of that wasted chemicals. You can estimate the colour cost based on your mixing ratios, to subtract the cost of bleach and activators.

Once you know how much you have wasted you'll be ready to take action!

A highly effective option for reducing and auditing your colour waste is by using a service like SmartMix or yuv which can reduce colour waste by 20-35%.

Brands

Educate your customers! Both your B2B and direct consumers deserve to know what ingredients you are putting in the products they are buying and whether they need to use them with caution. Openly share health and safety guidance and best practices to keep everyone safe! (Also don't hide!)

6.

FURTHER RESEARCH

COSHH compliance. We found that 60% of respondents did not have a COSHH register in their salon or barbershop. As our sample size was small (n=26), it would be interesting to see to what extent this is representative of these businesses across the whole of the UK. How many salons are putting themselves at risk (physically, legally and financially) by not having this legal requirement?

Education and training. Related to that, it would be interesting to learn to what extent hairdressing chemical health and safety education could improve quality of life and working conditions. This could be measured (pre and post intervention) by surveys, employee retention rates or compensation claims.

SmartMix and similar tech. We would like to see more data from salons and barbershops before and after onboarding waste minimisation technology like SmartMix to more accurately state savings. It would also be interesting to learn what type of establishments have the most success from this innovation and why.

Chemical recycling. We would also encourage research into the feasibility of chemical recycling as a solution for colour waste. No studies have focused on this directly and it would either open up a new possibility in hairdressing waste management or else settle the argument for good. Or at least for now!

7.

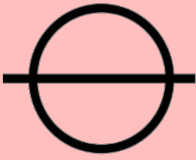
ACKNOWLEDGEMENTS

- Jess Rigg, Project Manager at Green Salon Collective | project lead
- Stephanie Hodgson, head of Green Salon Collective Research and PhD Researcher at Utrecht University | project assistant
- Victoria Tarrant, owner of SmartMix | interviewee
- Lacey Hunter-Felton, owner of Hunter Collective | interviewee
- Tabitha James Kraan, owner of Tabitha James Kraan | interviewee
- Caroline Larissey, Director of Quality and Standards for National Hair & Beauty Federation | interviewee
- GSC community | polling, surveying and unwavering support

8.

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