Chemicals in Cosmetics

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About This Dataset

This dataset contains information on chemicals used in cosmetics, including the name of the chemical, the company that uses it, the category of cosmetics it is used in, and the date it was first reported.

Data Source:

Downloaded from www.kaggle.com

Project Tool: *SQL & Tableau*

Data Cleaning Process

- The Following steps were taken to prepare the given data for analysis:
  - Checked for duplicate data, none was found.
  - Standardized 'ChemicalCreatedAt', 'InitialDateReported', 'DiscontinuedDate', 'ChemicalDateRemoved' and 'MostRecentDateReported' columns from datetime format to date format using the formula below for each column:

```
-- Standardize ChemicalCreatedAt
select ChemicalCreatedAt, CONVERT(date,ChemicalCreatedAt) AS ChemicalCreatedAtConverted
From Skilphore.dbo.ChemicalsInCosmetics
```

  - Altered and updated the table with the new column names created

```
--Update the Table

ALTER TABLE Skilphore.dbo.ChemicalsInCosmetics
Add ChemicalCreatedAtConverted Date;

Update Skilphore.dbo.ChemicalsInCosmetics
SET ChemicalCreatedAtConverted = CONVERT(date,ChemicalCreatedAt)
```

Data Cleaning Process Continued…

- In the 'ChemicalDateRemoved' column 2103 and 2104 were replaced with 2013 and 2014 respectively.

```
-- Replacing 2103 and 2104 with 2013 and 2014 in the ChemicalDateRemoved column
Update Skilphore.dbo.ChemicalsInCosmetics
SET ChemicalDateRemoved = DATEADD(Year, (2013 -  Year(ChemicalDateRemoved)), ChemicalDateRemoved)
From Skilphore.dbo.ChemicalsInCosmetics
where ChemicalDateRemoved >='2103-01-01'
```

•Typos were corrected in the 'BrandName' column as shown below: Typos **were corrected in the 'BrandName' column as shown below:**

```
--Correcting Typos in the 'BrandName Column'
Select BrandName
, CASE When BrandName = 'Burtï¿½s Bees' THEN 'Burtis Bees'
       When BrandName = 'EXCELONï¿½' THEN 'EXCELON'
       When BrandName = 'Pacific Gardenï¿½' THEN 'Pacific Garden'
       When BrandName = 'GOJOï¿½' THEN 'GOJO'
       ELSE BrandName
       END
From Skilphore.dbo.ChemicalsInCosmetics

Update Skilphore.dbo.ChemicalsInCosmetics
SET BrandName = CASE When BrandName = 'Burtï¿½s Bees' THEN 'Burtis Bees'
       When BrandName = 'EXCELONï¿½' THEN 'EXCELON'
       When BrandName = 'Pacific Gardenï¿½' THEN 'Pacific Garden'
       When BrandName = 'GOJOï¿½' THEN 'GOJO'
       ELSE BrandName
       END
```

Analysis

1. Find out which chemicals were used the most in cosmetics and personal Care Products.

➔ The most used chemicals in cosmetics and personal care products are Shown below:

SQLQuerySkilphore...M90UAFJ\user (65))*

```
--1. Find out which chemicals were used the most in cosmetics and personal care products.
Select ChemicalName, Count(ChemicalName) as MostUsedChemical
From Skilphore.dbo.ChemicalsInCosmetics
where ChemicalName is not Null
Group by ChemicalName
Order by MostUsedChemical DESC
```

121 %

Results | Messages

	ChemicalName	MostUsedChemical
1	Titanium dioxide	93252
2	Silica, crystalline (airborne particles of respirable ...	2742
3	Retinol/retinyl esters, when in daily dosages in e...	2154
4	Mica	1911
5	Butylated hydroxyanisole	1888
6	Carbon black	1753
7	Talc	1534
8	Cocamide diethanolamine	1397
9	Retinyl palmitate	1181
10	Vitamin A palmitate	971
11	Trade Secret	668
12	Mineral oils, untreated and mildly treated	514
13	Triethanolamine	455
14	Carbon black (airborne, unbound particles of res...	440
15	Retinol	270
16	Cocamide DEA	234
17	Benzophenone	231

Query executed successfully. | DESKTOP-M90UAFJ\SQLEXPRESS ... | DESKTOP-M90UAFJ\user (65) | master | 00:00:00 | 123 rows

2. Find out which companies used the most reported chemicals in their cosmetics and personal care products.

➔ The Companies that used the most reported chemicals in their cosmetics and personal care products are shown below:

SQLQuerySkilphore...M90UAFJ\user (65))*

```
--2. Find out which companies used the most reported chemicals in their cosmetics and personal care products
Select CompanyName, ChemicalName, Count(ChemicalName) as MostReportedChemical
From Skilphore.dbo.ChemicalsInCosmetics
where ChemicalName is not Null
Group by CompanyName,ChemicalName
Order by MostReportedChemical DESC
```

121 %

Results | Messages

	CompanyName	ChemicalName	MostReportedChemical
1	L'Oreal USA	Titanium dioxide	5742
2	Revlon Consumer Product Corporation	Titanium dioxide	4226
3	S+	Titanium dioxide	3990
4	Coty	Titanium dioxide	3792
5	Bare Escentuals Beauty, Inc.	Titanium dioxide	3782
6	The Procter & Gamble Company	Titanium dioxide	3451
7	Tarte Cosmetics	Titanium dioxide	2403
8	Nars Cosmetics	Titanium dioxide	2055
9	NYX Los Angeles, Inc.	Titanium dioxide	2031
10	The Boots Company PLC	Titanium dioxide	1956
11	Victoria's Secret Beauty	Titanium dioxide	1886
12	American International Industries	Titanium dioxide	1760
13	Beauty 21 Cosmetics, Inc.	Titanium dioxide	1670
14	Parfums Christian Dior	Titanium dioxide	1561
15	Charlotte Tilbury Beauty Ltd	Titanium dioxide	1548
16	Nail Alliance - Entity	Titanium dioxide	1469
17	CLARINS S.A.	Titanium dioxide	1461
18	MAKE UP FOR EVER	Titanium dioxide	1455

Query executed successfully. | DESKTOP-M90UAFJ\SQLEXPRESS ... | DESKTOP-M90UAFJ\user (65) | master | 00:00:00 | 1,593 rows

3. Which brands had chemicals that were removed and discontinued? Identify the Chemicals

➔ The Brands with chemicals removed and discontinued are shown below:

SQLQuerySkilphore...M90UAFJ\user (65))*

```
--3. Which brands had chemicals that were removed and discontinued? Identify the chemicals

Select Distinct BrandName, ChemicalName, ChemicalDateRemoved, DiscontinuedDateConv
From Skilphore.dbo.ChemicalsInCosmetics
where DiscontinuedDateConv is not null
and ChemicalDateRemoved is not null
Order by BrandName,ChemicalName DESC
```

121 %

Results | Messages

	BrandName	ChemicalName	ChemicalDateRemoved	DiscontinuedDateConv
1	Alfred Sung	Styrene	2010-11-15	2012-04-11
2	Alfred Sung	Styrene	2011-04-14	2012-04-11
3	All Hands	Cocamide diethanolamine	2014-10-09	2015-07-09
4	AMBI	Titanium dioxide	2012-12-31	2012-12-31
5	America's Choice	Titanium dioxide	2012-04-20	2012-09-27
6	America's Choice	Retinol/retinyl esters, when in daily dosages in excess of 10,000 IU, or 3,000 retinol equivalents.	2012-04-05	2012-10-04
7	Anastasia Beverly Hills	Titanium dioxide	2013-02-26	2016-01-01
8	Arbonne	Titanium dioxide	2014-01-29	2013-09-23
9	Aubrey Organics	Titanium dioxide	2010-06-25	2013-12-31
10	Badgley Mischka	Acetaldehyde	2010-07-26	2012-04-11
11	Bain de Terre	Estragole	2011-11-09	2013-04-01
12	Bain de Terre	Estragole	2011-11-09	2015-09-30
13	Bain de Terre	Estragole	2012-11-01	2013-01-01
14	Bain de Terre	Estragole	2012-11-27	2013-01-01
15	Bain de Terre	Estragole	2012-11-27	2013-03-01
16	Bath & Body Works	Titanium dioxide	2010-01-06	2011-02-01
17	Bath & Body Works	Titanium dioxide	2010-02-03	2012-02-01

Query executed successfully. | DESKTOP-M90UAFJ\SQLEXPRESS ... | DESKTOP-M90UAFJ\user (65) | master | 00:00:00 | 237 rows

4. Identify the brands that had chemicals which were mostly reported in 2018.

➔The brands with chemicals mostly reported in 2018 are shown below:

SQLQuerySkilphore...M90UAFJ\user (61))*

```
--4. Identify the brands that had chemicals which were mostly reported in 2018
With Most_Reported_Chemicals As(
Select BrandName, ChemicalName, Count(ChemicalName) as Most_Reported, Year(InitialDateReported) as Report_Year
From Skilphore.dbo.ChemicalsInCosmetics
Where  Year(InitialDateReported)= 2018
and Brandname is not null
Group By BrandName,ChemicalName, InitialDateReported)
Select BrandName, ChemicalName,Most_Reported, Report_Year, ROW_NUMBER()
over(Order by Report_Year DESC,Most_Reported DESC, Brandname) as Report_Hierarchy
From Most_Reported_Chemicals
```

121 %

Results | Messages

	BrandName	ChemicalName	Most_Reported	Report_Year	Report_Hierarchy
1	L.A. GIRL	Titanium dioxide	521	2018	1
2	Parfums Christian Dior	Titanium dioxide	507	2018	2
3	MAKE UP FOR EVER	Titanium dioxide	317	2018	3
4	Charlotte Tilbury	Titanium dioxide	282	2018	4
5	MAKE UP FOR EVER	Titanium dioxide	277	2018	5
6	MAKE UP FOR EVER	Titanium dioxide	233	2018	6
7	MAKE UP FOR EVER	Titanium dioxide	156	2018	7
8	MAKE UP FOR EVER	Carbon black	137	2018	8
9	tarte, inc.	Titanium dioxide	129	2018	9
10	Parfums Christian Dior	Titanium dioxide	122	2018	10
11	Parfums Christian Dior	Titanium dioxide	121	2018	11
12	Charlotte Tilbury	Silica, crystalline (airborne particles of respi...	115	2018	12
13	ZOEVA	Titanium dioxide	114	2018	13
14	ZOEVA	Talc	111	2018	14

Query executed successfully. | DESKTOP-M90UAFJ\SQLEXPRESS ... | DESKTOP-M90UAFJ\user (61) | master | 00:00:00 | 685 rows

5. Which brands had chemicals discontinued and removed?

➔ The Brands that had chemicals discontinued and removed are shown below:

SQLQuerySkilphore...M90UAFJ\user (65))*

```
--5. Which brands had chemicals discontinued and removed?
Select Distinct BrandName,ChemicalName,DiscontinuedDateConv,ChemicalDateRemovedConv
From Skilphore.dbo.ChemicalsInCosmetics
where DiscontinuedDateConv is not null
and ChemicalDateRemovedConv is not null
```

121 %

Results | Messages

	BrandName	ChemicalName	DiscontinuedDateConv	ChemicalDateRemovedConv
1	Alfred Sung	Styrene	2012-04-11	2010-11-15
2	Alfred Sung	Styrene	2012-04-11	2011-04-14
3	All Hands	Cocamide diethanolamine	2015-07-09	2014-10-09
4	AMBI	Titanium dioxide	2012-12-31	2012-12-31
5	America's Choice	Retinol/retinyl esters, when in daily dosages in...	2012-10-04	2012-04-05
6	America's Choice	Titanium dioxide	2012-09-27	2012-04-20
7	Anastasia Beverly Hills	Titanium dioxide	2016-01-01	2013-02-26
8	Arbonne	Titanium dioxide	2013-09-23	2014-01-29
9	Aubrey Organics	Titanium dioxide	2013-12-31	2010-06-25
10	Badgley Mischka	Acetaldehyde	2012-04-11	2010-07-26
11	Bain de Terre	Estragole	2013-01-01	2012-11-01
12	Bain de Terre	Estragole	2013-01-01	2012-11-27
13	Bain de Terre	Estragole	2013-03-01	2012-11-27
14	Bain de Terre	Estragole	2013-04-01	2011-11-09
15	Bain de Terre	Estragole	2015-09-30	2011-11-09
16	Bath & Body Works	Retinol/retinyl esters, when in daily dosages in...	2011-03-01	2010-06-10
17	Bath & Body Works	Titanium dioxide	2011-02-01	2010-01-06
18	Bath & Body Works	Titanium dioxide	2012-02-01	2010-02-03

Query executed successfully. | DESKTOP-M90UAFJ\SQLEXPRESS ... | DESKTOP-M90UAFJ\user (65) | master | 00:00:00 | 237 rows

6. Identify the period between the creation of the removed chemicals and when they were actually removed.

➔ The period between the creation of the removed chemicals and when they were actually removed is shown below (in days):

SQLQuerySkilphore...M90UAFJ\user (51))*

```
--6. Identify the period between the creation of the removed chemicals and when they were actually removed
Select ChemicalName,ChemicalCreatedAtConverted, ChemicalDateRemoved,  Abs(Datediff (YEAR,
ChemicalCreatedAtConverted, ChemicalDateRemoved)) AS Period_In_Years
From Skilphore.dbo.ChemicalsInCosmetics
Where ChemicalCreatedAtConverted is not null
And ChemicalDateRemoved is not null
Order by Period_In_Years DESC
```

121 %

Results | Messages

	ChemicalName	ChemicalCreatedAtConverted	ChemicalDateRemoved	Period_In_Years
1	Benzophenone-2	2018-07-03	2000-01-01	18
2	Titanium dioxide	2009-11-30	2019-05-20	10
3	Retinol/retinyl esters, when in daily dosages in...	2009-12-08	2019-03-25	10
4	Titanium dioxide	2009-11-30	2018-09-01	9
5	Titanium dioxide	2010-09-27	2018-07-01	8
6	Titanium dioxide	2009-10-13	2017-05-25	8
7	Titanium dioxide	2009-10-13	2017-05-25	8
8	Titanium dioxide	2009-10-13	2017-05-25	8
9	Titanium dioxide	2010-06-08	2018-12-31	8
10	Silica, crystalline (airborne particles of respirabl...	2010-06-24	2018-10-15	8
11	Titanium dioxide	2009-12-17	2016-12-31	7
12	Titanium dioxide	2009-12-08	2016-08-29	7
13	Titanium dioxide	2009-12-08	2016-08-29	7
14	Titanium dioxide	2009-12-08	2016-08-29	7
15	Titanium dioxide	2009-12-08	2016-08-29	7
16	Titanium dioxide	2009-12-09	2016-08-24	7
17	Titanium dioxide	2009-12-09	2016-08-24	7

Query executed successfully. | DESKTOP-M90UAFJ\SQLEXPRESS ... | DESKTOP-M90UAFJ\user (51) | master | 00:00:00 | 2,973 rows

7. Can you tell if Discontinued Chemicals in Bath products were Removed?

➔ Discontinued Chemicals in Bath products were removed.

SQLQuerySkilphore...M90UAFJ\user (51))*

```
--7b. Can you tell if discontinued chemicals in bath products were removed
Select PrimaryCategory, ChemicalName,DiscontinuedDateConv, ChemicalDateRemovedConv
From Skilphore.dbo.ChemicalsInCosmetics
where PrimaryCategory = 'bath products'
and DiscontinuedDate is not Null
and ChemicalDateRemovedConv is not null
Order by PrimaryCategory
```

121 %

Results | Messages

	PrimaryCategory	ChemicalName	DiscontinuedDateConv	ChemicalDateRemovedConv
1	Bath Products	Titanium dioxide	2013-05-13	2009-09-25
2	Bath Products	Retinol/retinyl esters, when in daily dosages in...	2013-05-13	2009-09-29
3	Bath Products	Retinol/retinyl esters, when in daily dosages in...	2013-05-13	2009-09-29
4	Bath Products	Titanium dioxide	2012-02-01	2012-02-01
5	Bath Products	Cocamide diethanolamine	2011-02-11	2009-09-21
6	Bath Products	Cocamide diethanolamine	2011-02-11	2012-01-10
7	Bath Products	Benzophenone	2013-12-31	2013-12-31
8	Bath Products	Cocamide diethanolamine	2013-07-10	2012-01-10
9	Bath Products	Cocamide diethanolamine	2013-07-10	2009-10-08
10	Bath Products	Cocamide diethanolamine	2011-02-03	2104-05-02
11	Bath Products	Cocamide diethanolamine	2011-02-03	2014-05-02
12	Bath Products	Cocamide diethanolamine	2013-07-10	2012-01-10
13	Bath Products	Cocamide diethanolamine	2013-07-10	2012-01-10
14	Bath Products	Cocamide diethanolamine	2011-02-11	2011-02-11
15	Bath Products	Cocamide diethanolamine	2013-07-10	2012-01-10
16	Bath Products	Cocamide diethanolamine	2013-07-10	2012-01-10
17	Bath Products	Cocamide diethanolamine	2013-07-10	2012-01-10

Query executed successfully. | DESKTOP-M90UAFJ\SQLEXPRESS ... | DESKTOP-M90UAFJ\user (51) | master | 00:00:00 | 68 rows

8. How long were removed chemicals in baby products used?

➔ The Period during which the removed chemicals in baby products were used is shown below (in days):

SQLQuerySkilphore...M90UAFJ\user (51))*

```
--8. How long were removed chemicals in baby products used?
Select Distinct ProductName, PrimaryCategory, ChemicalName,ChemicalCreatedAtConverted,
ChemicalDateRemoved,  Abs(Datediff (YEAR,
ChemicalCreatedAtConverted, ChemicalDateRemoved)) AS Removal_Period_In_Years
From Skilphore.dbo.ChemicalsInCosmetics
Where PrimaryCategory = 'baby Products'
and ChemicalCreatedAtConverted is not null
And ChemicalDateRemoved is not null
Order by Removal_Period_In_Years DESC
```

121 %

Results | Messages

	ProductName	PrimaryCategory	ChemicalName	ChemicalCreatedAtConverted	ChemicalDateRemoved	Removal_Period_In_Years
1	Hydra Stick with Cold Cream-Nutriprotective	Baby Products	Titanium dioxide	2009-10-15	2015-07-13	6
2	LOVE ETC BODY WASH	Baby Products	Cocamide diethanolamine	2010-07-14	2012-01-10	2
3	BubbleGum Bubbles No Tears Shampoo	Baby Products	Trade Secret	2009-09-30	2009-10-13	0

Query executed successfully. | DESKTOP-M90UAFJ\SQLEXPRESS ... | DESKTOP-M90UAFJ\user (51) | master | 00:00:00 | 3 rows

9. Identify the relationship between chemicals that were mostly recently reported and discontinued.

➔ The Relationship between the two columns are shown below:

SQLQuerySkilphore...M90UAFJ\user (51))*

```
--9a.Identify the relationship between chemicals that were mostly recently reported and discontinued.
select ChemicalName, count(MostRecentDateReported2) as MostReported, count(DiscontinuedDateConv) as Discontinued
from Skilphore.dbo.ChemicalsInCosmetics
Where DiscontinuedDateConv is not null
Group by ChemicalName, MostRecentDateReported2, DiscontinuedDateConv
Order by MostRecentDateReported2,DiscontinuedDateConv Desc
```

121 %

Results | Messages

	ChemicalName	MostReported	Discontinued
1	Titanium dioxide	1	1
2	Titanium dioxide	2	2
3	Titanium dioxide	1	1
4	Titanium dioxide	1	1
5	Titanium dioxide	10	10
6	Titanium dioxide	3	3
7	Cocamide diethanolamine	1	1
8	Titanium dioxide	1	1
9	Titanium dioxide	1	1
10	Titanium dioxide	1	1
11	Titanium dioxide	1	1
12	Titanium dioxide	1	1
13	Titanium dioxide	1	1
14	Butylated hydroxyanisole	1	1
15	Titanium dioxide	12	12
16	Titanium dioxide	6	6
17	Butylated hydroxyanisole	1	1
18	Titanium dioxide	1	1

Query executed successfully. | DESKTOP-M90UAFJ\SQLEXPRESS ... | DESKTOP-M90UAFJ\user (51) | master | 00:00:00 | 2,286 rows

10. Identify the relationship between CSF and chemicals used in the most manufactured sub categories.

➔ The Relationship between the CSF and Chemicals used in the most Manufactured Sub categories are shown below:

SQLQuerySkilphore...M90UAFJ\user (57))*

```
--10. Identify the relationship between CSF and chemicals used in the most manufactured sub categories.
--(Tip: Which chemicals gave a certain type of CSF in sub categories?)
select ChemicalName, CSF, SubCategory, count(subcategory) as most_manufactured
from skilphore.dbo.ChemicalsInCosmetics
Where CSF is not Null
Group by ChemicalName,CSF,Subcategory
Order by Most_manufactured DESC
```

121 %

Results | Messages

	ChemicalName	CSF	SubCategory	most_manufactured
1	Titanium dioxide	Light	Foundations and Bases	155
2	Titanium dioxide	Medium	Foundations and Bases	141
3	Titanium dioxide	BLACK	Mascara/Eyelash Products	132
4	Titanium dioxide	Ivory	Foundations and Bases	119
5	Titanium dioxide	titanium dioxide	Nail Polish and Enamel	105
6	Titanium dioxide	Natural beige	Foundations and Bases	98
7	Titanium dioxide	Fair	Foundations and Bases	89
8	Titanium dioxide	Tan	Foundations and Bases	80
9	Titanium dioxide	Porcelain	Foundations and Bases	73
10	Titanium dioxide	Honey	Foundations and Bases	71
11	Titanium dioxide	Nude	Foundations and Bases	65
12	Titanium dioxide	BEIGE	Foundations and Bases	65
13	Titanium dioxide	Black	Eyeliner/Eyebrow Pencils	61
14	Titanium dioxide	Brown	Eyeliner/Eyebrow Pencils	59
15	Titanium dioxide	Creamy Natural	Foundations and Bases	59
16	Titanium dioxide	Almond	Foundations and Bases	58

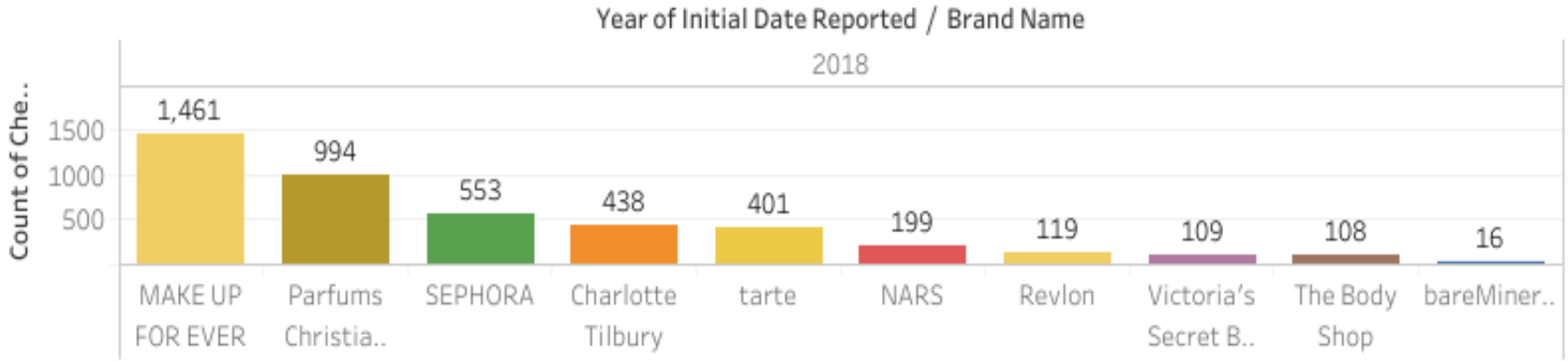
Query executed successfully. | DESKTOP-M90UAFJ\SQLEXPRESS ... | DESKTOP-M90UAFJ\user (57) | master | 00:00:00 | 50,586 rows

Insights

1) The most used chemical in cosmetics and personal care products was ‘Titanium dioxide’.
2) The companies that used the most reported chemicals in their cosmetics and personal care products are ‘L'Oréal USA’, ‘Revlon’, etc.
3) The brands that had chemicals removed and discontinued are ‘Alfred Sung’, ‘All hands’, ‘AMBI’, ‘America’s choice’, etc.
4) The brands with chemicals mostly reported in 2018 are ‘L.A. Girl’, ‘Parfums Christian Dior’, ‘MAKE UP FOREVER’, etc.
5) The Relationship between chemicals that were mostly reported and discontinued is that the number of chemicals reported was equal to the number of chemicals discontinued.

Dashboard

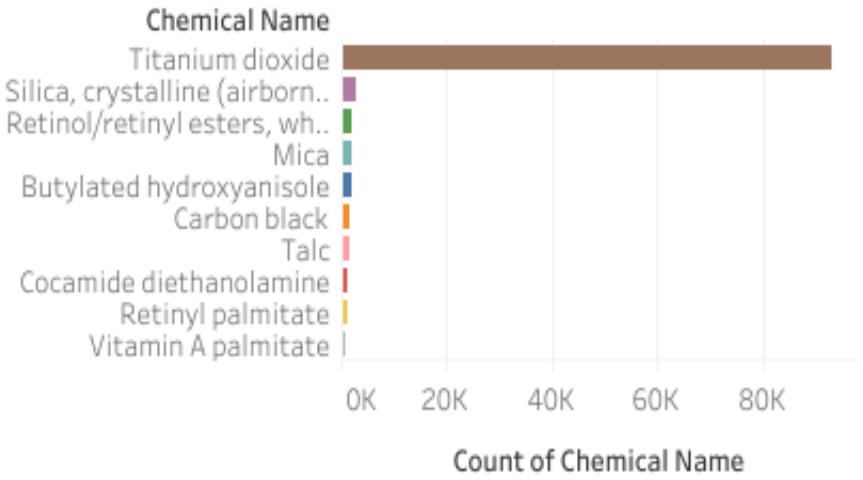
Brands with Most Reported Chemicals in 2018



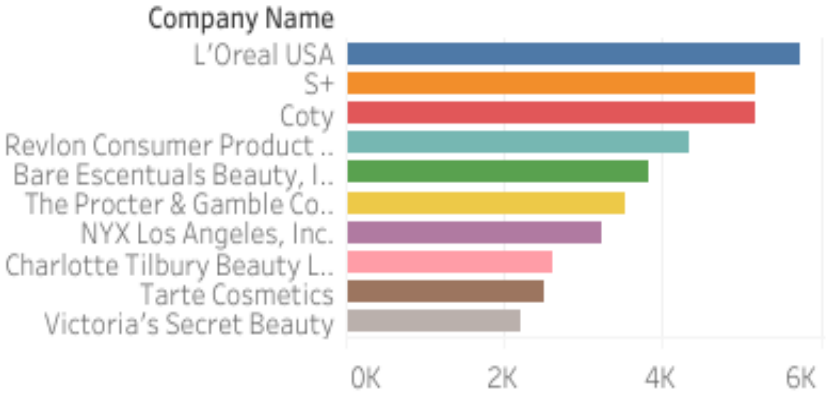
Chemicals Discontinued and Removed in Bath Products

Primary Cat..	Chemical N..	Year of Disc..	Year of Cl
Bath Products	Butylated h..	2015	2010
	Cocamide die	2006	2006
	thanolamine	2011	2009
			2011
			2012

Most Used Chemical



Company with the Most Reported Chemical



Brands with Chemicals Removed and Discontinued

Brand Name	Chemical Name	Year of D
Alfred Sung	Styrene	2012
All Hands	Cocamide diethanolamine	2015
AMBI	Titanium dioxide	2012
America's Choice	Retinol/retinyl esters, whe..	2012
	Titanium dioxide	2012
Anastasia B..	Titanium dioxide	2016

Thank You