

# The Chemist & the Web

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The slides from this presentation  
can be found at:

[www.hellers.com/steve/pub-  
talks/chicago01/slide001.html](http://www.hellers.com/steve/pub-talks/chicago01/slide001.html)



# With apologies to Benjamin Disraeli...

There are four kinds of lies:

Lies

Damned Lies

Statistics

Internet statistics

# Search Engines are like spouses

- if you have more than one things get complicated.

**The Internet/World Wide Web contains a great deal of useful and valuable information for the practicing chemist.**

**While some of the the information is free, a majority of the valuable information requires payment for access.**

**This presentation will provide an overview of what is on the web, both free and fee-based, and provides examples of what chemists do on an everyday basis when they access the web.**

**Examples will be taken from a variety of web resources such as the WebBook, ChemWeb, Chemindustry.com, chemical societies, and publishers.**

## **Zeitgeist Explained...**

zeit·geist | Pronunciation: 'tsIt-'gIst, 'zIt | Function: noun | Etymology: German, from Zeit (time) + Geist (spirit) | Date: 1884 | Meaning: the general intellectual, moral, and cultural climate of an era

By permission. From Merriam-Webster's Collegiate® Dictionary at [www.Merriam-Webster.com](http://www.Merriam-Webster.com) by Merriam-Webster, Incorporated.



## 12 Most Popular Search Terms at 10 Leading Portals and Search Engines from March 1999 to January 2001

1. sex	0.3289%
2. hotmail	0.2131%
3. yahoo	0.2044%
4. porn/pornography	0.1402%
5. chat/chatrooms	0.1233%
6. mp3	0.0935%
7. horoscopes/horoscope	0.0800%
8. ebay	0.0731%
9. aol	0.0714%
10. games	0.0659%
11. map/maps	0.0585%
12. Pokemon	0.0549%

# Google Top 10 Search Terms - February, 2001

## (Gaining Queries)

1. gnutella
2. greeting cards
3. valentine cards
- 4.mp3
5. dale earnhardt
6. all your base are belong to us
7. valentine
8. Napster
9. sms
10. nascar

# Google Top 10 Search Terms - February, 2001

## (Declining Queries)

1. xfl
2. annabel chong
3. survivor
4. eminem
5. groundhog day
6. earthquake
7. india
8. big brother
9. anna kournikova
10. ginger

# Google Top 10 Search Terms –Week of August 13, 2001 (Gaining Queries)

1. baycol
2. default.ida
3. shannon elizabeth
4. fantasy football
5. ikea
6. nvidia
7. kid rock
8. jorge amado
9. james dean
10. umptn 2001

Where are “stem cells”?

# Google Top 10 Search Terms –Week of August 13, 2001 (Declining Queries)

1. code red virus
2. tour de france
3. norton antivirus
4. planet of the apes
5. mariah carey
6. etna
7. Leilani Rios
8. orbitz
9. camping
10. rakhi cards

# Lycos Top 12/50 (8/01)

- 1 Dragonball
- 2 Code Red Virus
- 3 Tattoos
- 4 Britney Spears
- 5 WWF
- 6 Pokemon
- 7 Las Vegas
- 8 Morpheus
- 9 IRS
- 10 Final Fantasy
- 11 Sircam Virus
- 12 Planet of the Apes

## Scirus - April/2001 - Top 14

finite capacity scheduling

transport properties

adultery

feuerstein

conjugate gradient

lamb wave

antifreeze proteins

mars

antigravity

gene

cunliffe

broadband

linguistic categories

dna

## Scirus - May/2001 - Top 14

enso

hazardous waste management and policies

brasseur

capillary optics

rechnernetze

pearson distribution

uranium recovery

variable frequency drives

celiac disease

mars

jadeite

cloning

cichlid?

starch



## Scirus - June 2001 - Top 14

phase field

heat\*shock response

free amino acids

chromatography

thamnophis

singlet oxygen

acidity

notes

double barrier tunneling

probiotics

protein stability

bitter taste

force constant

dissociative identity disorder

# Goto.com - July 2001

Total: ~2 Billion searches

prozac - 43,345  
chemistry - 35,087  
lipitor - 19,378  
organic chemistry - 6,779  
prozac side effects - 3,794  
benzene - 2,474  
analytical chemistry - 1,446  
journal of biological chemistry - 1,324  
mass spectrometry - 1,278  
cas number/s - 1,104  
acs - 848  
royal society of chemistry - 397  
journal of the american chemical society - 336  
chemistry molotov cocktail - 328  
career in chemistry - 168  
buy viagra online - 134  
chemistry web site - 128

**Top terms from ACS journals web site  
(April 2000 and June 2001)**

**in-1319 ; the-1173 ; alphabet (a: 5911 - q: 122)**

**acid-1109**

**synthesis-800**

**protein-683**

**polymer-558**

**water-504**

**dna-492**

**metal-442**

**molecular-432**

**chemical-404**

**analysis-399**

**chemistry-393**

**reaction-384**

**structure-361**

**steve-18 ... heller-14 .....**

# ACS Web Site Usage

1. ACS meetings
2. Chicago meeting
3. ACS Education
4. Search of the web site
5. ACS careers
6. ACS library
7. ACS Employment
8. ACS membership
9. ACS Government Affairs
10. Join ACS

## **RSC Web Site Usage - May, 2001**

solid state reaction - 2599

cation - 1130

zeolite - 929

xps - 747

phosphors - 638

vitamins fruit - 626

rubber - 602

water oxidation - 601

hexavalent uranium - 588

bimetallic - 553

silver - 515

battery - 511

fuel cell - 483

# ChemSoc Web Site Usage - May, 2001

watoc - 164

periodic table - 89

hplc - 70

elements - 50

green chemistry - 45

ursodeoxycolic acid - 33

royal society of chemistry - 32

medicinal chemistry - 31

periodic table of elements- 31

jobs in chemistry - 28

chemists - 27

acquisition solutions-26

# ChemWeb Top Search Search Terms

Iliev	1845
Chitosan	1723
Benzene	1171
Microwave	1120
Polyaniline	1116
Chemist	1077
Zeolite	1018
Polymer	1015
Lipase	976
Chromatography	891
Cyclodextrin	887
Catalysis	881

# Chemindustry.com - Most often Searched for Categories

May

Chemical manufacturers  
Chemical distributors & dealers  
Job banks, recruiting & job seeking  
Pharmaceuticals, biochemicals  
& intermediates  
Polymers, plastics & additives  
Petrochemicals & hydrocarbons  
Chemical names, properties  
& structures  
Agrochemicals & fertilizers  
Chemistry  
Adhesives and sealants

July

Chemical manufacturers  
Pharmaceuticals, biochemicals  
& intermediates  
Job banks, recruiting & job seeking  
Chemical distributors & dealers  
Periodic Tables  
Polymers, plastics & additives  
Petrochemicals & hydrocarbons  
Agrochemical & fertilizers  
Chemical names, properties  
& structures  
Oil, gas, refineries



# Chemindustry.com - Most often Searched for Chemicals

May

June

July

Phenol

Phenol

Soda Ash

Methanol

Soda Ash

Titanium Dioxide

Caustic Soda

Titanium Dioxide

Citric Acid

Citric Acid

Methanol

Carbon Black

Acetone

Caustic Soda

Chlorine

Sulfuric Acid

Acetic Acid

Red Phosphorus

Acetic Acid

Phosphoric Acid

Sodium Hydroxide

Chlorine

Ammonia

Ethanol

Titanium

Hydrogen Peroxide

Potassium Nitrate

# Chemindustry.com - Most often Searched for Non-Chemical Terms

May

Jobs  
Chemical Engineer  
Process Equipment  
Chemical Engineering  
Chemical Reactions  
Lab Equipment  
Periodic Table  
Pumps  
Heat Exchangers  
Used Equipment

June

Jobs  
MSDS  
Values  
Chemical Reactions  
Chemical Engineering  
Periodic Table  
Pumps  
Process Equipment  
Custom Manufacturing  
Chemical Databases

July

Jobs  
MSDS  
Chemical Databases  
Periodic Table  
Chemical Reactions  
Pumps  
ChemcialEngineering  
Values  
Software  
Process Equipment

**Date:** Tue, 14 Aug 2001 16:35:40 -0400  
**From:** Help <help@isinet.com>  
**To:** "'Dr. Stephen R. Heller'"  
**Subject:** RE: Help for ACS meeting talk

**Dear Dr. Heller,**

**Thank you for contacting the ISI. Technical Help Desk. I'm sorry, but we are unable to provide you with the information you are seeking. The only information available close to your request is highly cited papers, but you stated that is not what you are seeking.**

**Thank you for your interest in ISI products.**

**Date:** Mon, 20 Aug 2001 15:00:36 -0400

**From:** "Mears, Janice" <jmears@cas.org>

**To:** "'steve@hellers.com'" <steve@hellers.com>

**Cc:** "Shanbrom, Eileen" <eshanbrom@cas.org>

**Subject:** ACS talk

We do not have any information available directly related to your request. We have recently released a new web site, Science Spotlight, which lists most frequently requested documents via ChemPort.

<http://www.cas.org/spotlight>

# ChemGuide Usage

**Name/Synonym - 53%**

**Name + Property (benzene+toxicity) - 10%**

# NIST Chemistry WebBook Searches - May, 2001

Type of search	Searches	% of Total
Chemical name	91762	47.9%
Chemical formula	68601	35.8%
CAS registry number	15990	8.3%
Molecular weight	7346	3.8%
Energy levels: vibrational frequency	2814	1.5%
Chemical structure: applet interface	1439	0.8%
Ionization energy	823	0.4%
Chemical structure: form interface	610	0.3%
Energy levels: band head energy	589	0.3%
Electron affinity	393	0.2%
Author	352	0.2%
Proton affinity	349	0.2%
Acidity	248	0.1%

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## Relative Popularity of Chemistry Web Sites

<b>google.com</b>	<b>5</b>
<b>goto.com</b>	<b>149</b>
<b>lycos.com</b>	<b>426</b>
<b>chemindustry.com</b>	<b>3,282</b>
<b>chemweb.com</b>	<b>22,800</b>
<b>isinet</b>	<b>44,555</b>
<b>cas.org</b>	<b>61,929</b>
<b>scirus</b>	<b>62,851</b>
<b>rsc.org</b>	<b>63,294</b>
<b>acs.org</b>	<b>67,842</b>
<b>webbook.gov</b>	<b>111,333</b>
<b>chemguide.de</b>	<b>279,504</b>
<b>warr.com</b>	<b>1,289,376</b>





# Conclusions

1. General Search engines are used primarily for current events, general searches. Chemistry/chemical searches are rare and lead to randomly useful results.
2. Specific chemistry web sites are used for specific and generally non-overlapping information.

# Conclusions

3. Chemical Names, Chemical Formula, and CAS Registry Numbers are the main way to search for information.

4. Different sites are designed for and used by different users. E.g., The ACS Pubs and RSC sites tend to have academic/scientific queries; the chemindustry.com tends to have industry related/directed queries.

# Acknowledgements

I would like to thank all the individuals and organizations which provided me with their data and information. Without their help this presentation would not have been possible.