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# The Internet - How Toxicologists Can Use It To Their Advantage

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ABSTRACT

Internet has changed the way we look at the world today. It is much easier to communicate with the world today, as also to express one's ideas. Toxicologists can use the internet today not only to search for information but also to disseminate their own ideas. Many such ways are discussed in this short paper. Useful tips are given to start one's own toxicology newsgroups, fora and web pages.

**Keywords:** Discussion fora, Internet, Newsgroups, Online dissertations, Online theses, Toxicology, Toxicology newsgroups, Toxicology websites

## Medical Index Terms

*Internet; Toxicology; Medical Information System; Information Dissemination; Online System; Forensic Medicine; Computer Program; Human; Article*

## EMBASE Classifications

*027 - Biophysics, Bioengineering and Medical Instrumentation; 049 - Forensic Science Abstracts; 052 - Toxicology*

## Introduction

The Statement that computers and the Web have altered our way of conducting science has achieved the status of a cliché, but this too needs periodic emphasizing for the resources available to toxicologists are an ever widening and dynamic array.

*-Philip Wexler, Web Alert Editor for "Toxicology", in his editorial for Vol. 157 (2001), No. 1-2*

Although many historians would like to trace the history of the internet back to 1836 when Cooke and Wheatstone patented the telegraph (because it revolutionized human telecommunications), that would probably be stretching things too far. The true birth of internet appears to have occurred in 1969, when DoD commissioned ARPANET (Advanced Research Projects Agency Net) for research into networking. Since early nineties, the rate of the web's growth has been exponential. For the second half of 1990s, the Web had a doubling period of under 3 months. Today the doubling period is still under 6 months. In mid 1993, there were a total of 130 websites in the world; today they run into millions. According to some estimates, in 2004, the number of web users would be close to a billion; 280 million English and 657 million non-English speaking.

Though internet is permanent, individual websites can be very evanescent. They are too numerous as well. There are currently 10,000 websites on forensic toxicology alone! It would thus be futile to make even a very basic attempt at providing important toxicology URLs (Uniform Resource Locators, or web addresses) in the limited space that is available. Instead we would attempt to look at broad areas, where internet can be used to gain useful information on toxicology. We will also look at how internet can profitably be used by toxicologists to exchange valuable information, experiences, new technologies etc. among themselves. Although URLs of most sites mentioned in this chapter have been provided, it is important to realize that URLs keep changing due to the very dynamic nature of the internet. If a given URL does not seem to work, it might be a good idea to use a good search engine such as google.com, and make appropriate search, using the title of site one is searching for.

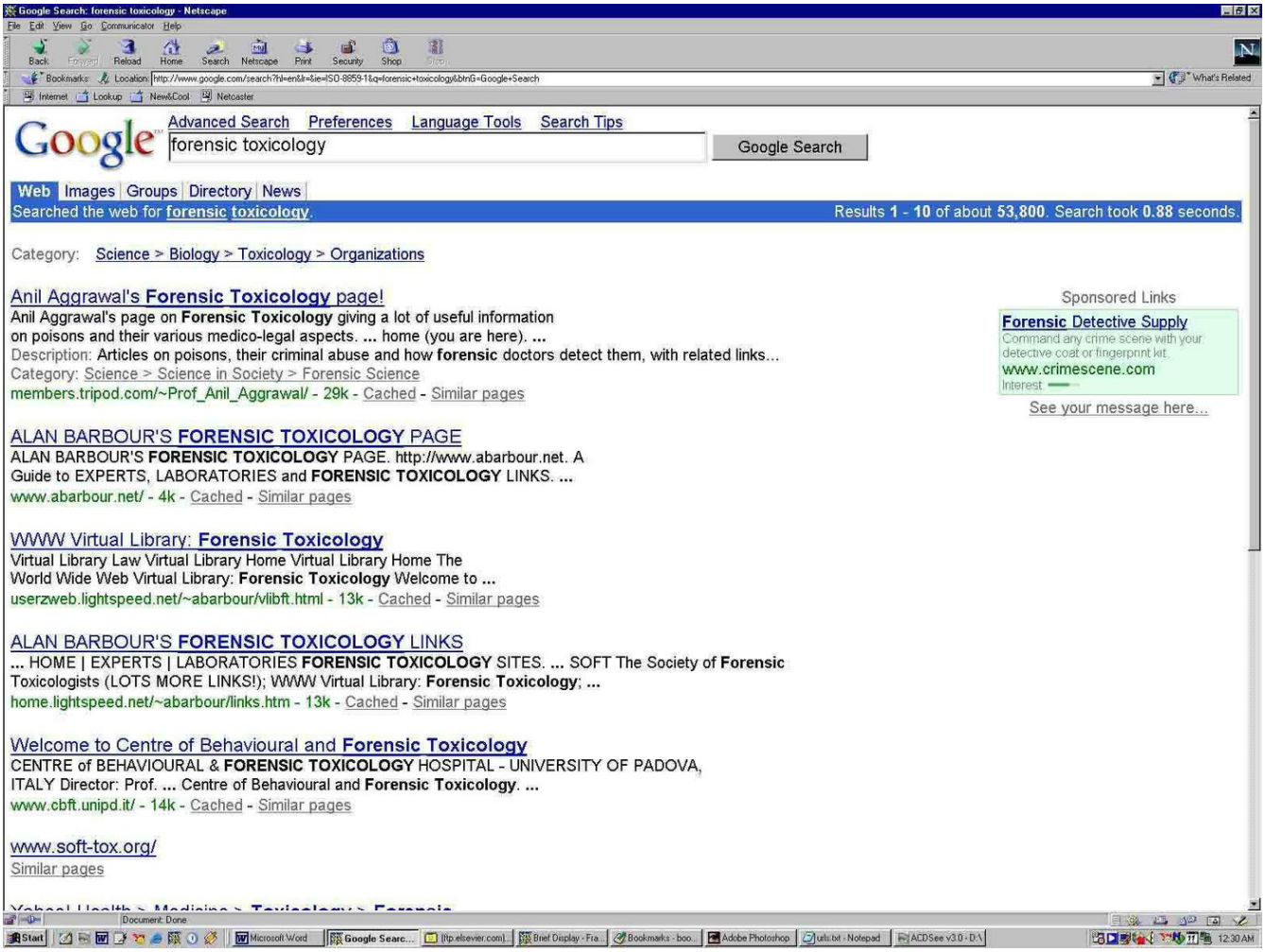
## Using The Search Tools On The Net

The current perception that the Internet provides universal and complete access to information is nowhere as fallacious as in toxicology. So much more information is available - but where? How do we sift out the good from the bad, the relevant from the irrelevant?

*-Shayne Cox Gad, Principal, Gad Consulting Services, Raleigh, North Carolina, in his Foreword to Philip Wexler's "Information Resources in Toxicology", 3rd Edition*

### Search Engines

The internet is the world's greatest library, but one where all books are lying scattered on the floor. One needs a systematic way to search the content of the net. There are several ways to do this. Search engines such as Yahoo, Google, AltaVista, Hotbot, Excite, Go, Fast, Lycos and Northern Light do this job remarkably well.


Google Search: forensic toxicology - Netscape
File Edit View Go Communicator Help
Back Forward Reload Home Search Netscape Print Security Shop Stop
Bookmarks Location: http://www.google.com/search?hl=en&lr=&ie=ISO-8859-1&q=forensic+toxicology&btnG=Google+Search
What's Related
Internet Lookup New&Cool Netcaster
Google
Advanced Search Preferences Language Tools Search Tips
forensic toxicology
Google Search
Web Images Groups Directory News
Searched the web for forensic toxicology.
Results 1 - 10 of about 53,800. Search took 0.88 seconds.
Category: Science > Biology > Toxicology > Organizations
Anil Aggrawal's Forensic Toxicology page!
Anil Aggrawal's page on Forensic Toxicology giving a lot of useful information on poisons and their various medico-legal aspects. ... home (you are here). ...
Description: Articles on poisons, their criminal abuse and how forensic doctors detect them, with related links...
Category: Science > Science in Society > Forensic Science
members.tripod.com/~Prof_Anil_Aggrawal/ - 29k - Cached - Similar pages
Sponsored Links
Forensic Detective Supply
Command any crime scene with your detective coat or fingerprint kit.
www.crimescene.com
Interest
See your message here...
ALAN BARBOUR'S FORENSIC TOXICOLOGY PAGE
ALAN BARBOUR'S FORENSIC TOXICOLOGY PAGE. http://www.abarbour.net. A Guide to EXPERTS, LABORATORIES and FORENSIC TOXICOLOGY LINKS. ...
www.abarbour.net/ - 4k - Cached - Similar pages
WWW Virtual Library: Forensic Toxicology
Virtual Library Law Virtual Library Home Virtual Library Home The World Wide Web Virtual Library: Forensic Toxicology Welcome to ...
userzweb.lightspeed.net/~abarbour/vlibft.html - 13k - Cached - Similar pages
ALAN BARBOUR'S FORENSIC TOXICOLOGY LINKS
... HOME | EXPERTS | LABORATORIES FORENSIC TOXICOLOGY SITES. ... SOFT The Society of Forensic Toxicologists (LOTS MORE LINKS!); WWW Virtual Library: Forensic Toxicology; ...
home.lightspeed.net/~abarbour/links.htm - 13k - Cached - Similar pages
Welcome to Centre of Behavioural and Forensic Toxicology
CENTRE of BEHAVIOURAL & FORENSIC TOXICOLOGY HOSPITAL - UNIVERSITY OF PADOVA, ITALY Director: Prof. ... Centre of Behavioural and Forensic Toxicology. ...
www.cbft.unipd.it/ - 14k - Cached - Similar pages
www.soft-tox.org/
Similar pages
Document: Done
Start
Microsoft Word
Google Searc...
Adobe Photoshop
ACDSee v3.0 - D:\
12:30 AM

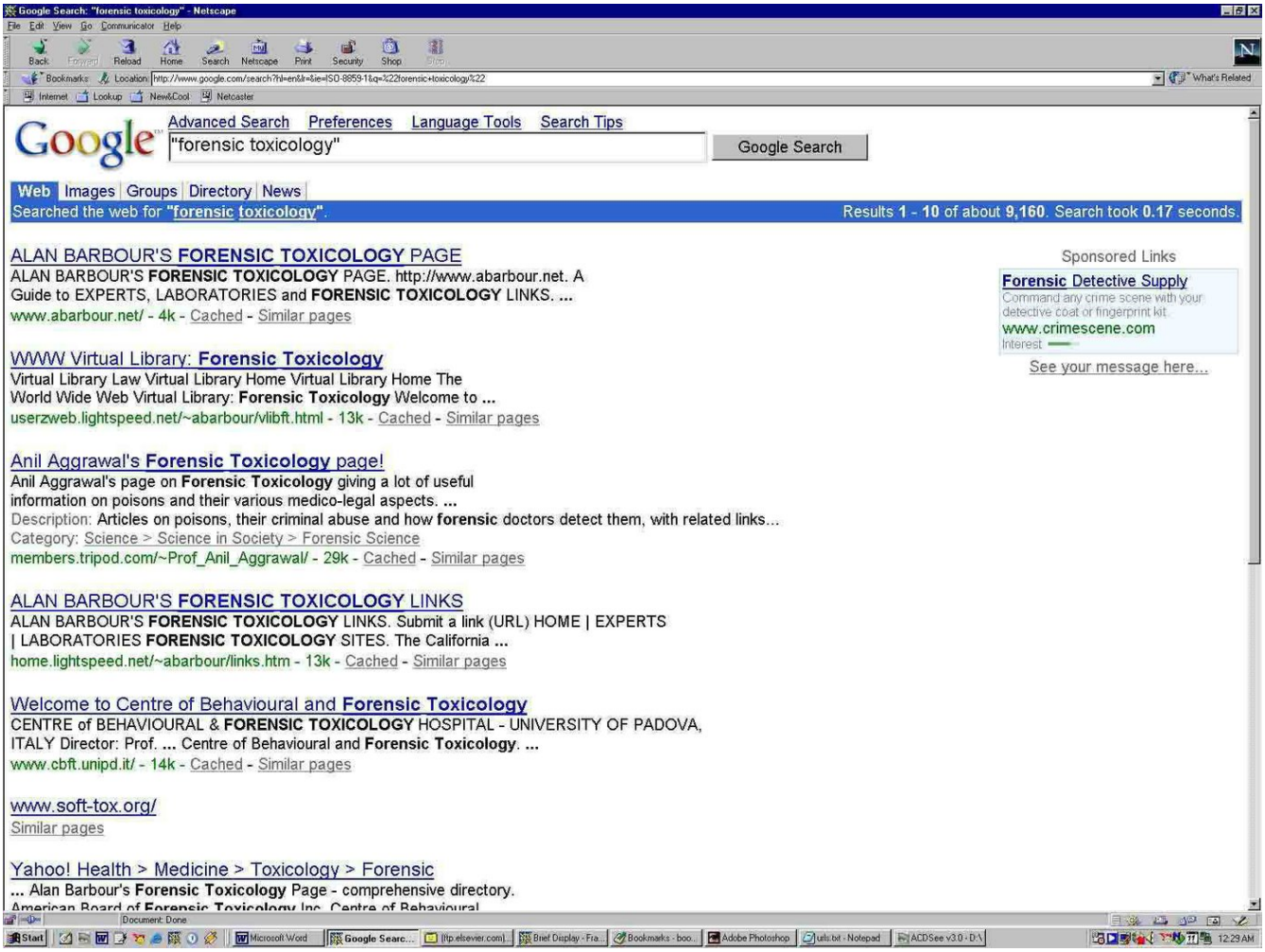



**Figure 1 (top) and Figure 2 (bottom).** While a total of 53,800 sites were returned by Google without using the " " signs, using them limited their number to just about 9000. Note that different sites change their orders too, in the two cases.

Using the search engine profitably may require some skills however. If not used correctly, search engines may return lot of "useless" information. If one were looking for websites on forensic toxicology, one way would be to go to the search box and write the following:

## Forensic toxicology

Note that there are no " " signs in this phrase. Another way one can write is:

"**Forensic Toxicology**"

Note that there are " " signs in this phrase. The difference between the information returned by the search engine by these two methods can be amazing, as can be gauged by the following two figures.

What actually happens is that when one just uses the phrase forensic toxicology WITHOUT using the "" signs, the search engines looks for both the words "forensic" and "toxicology" anywhere in the pages. If any of these words is found, the search engine would return this page in its results. The number of returned results would thus swell enormously. Most of these pages could be quite useless for the person who was actually looking for information on Forensic toxicology; not just on "forensic" or "toxicology".

Using the " " signs forces the search engine to look for the complete phrase "forensic toxicology", and quite possibly only relevant pages would be returned. The search engine shows the number of pages it found after each search. In figures 1 and 2, we can see that while Google found almost 54000 sites in the first case, in the second, it found just about 9000. The number was reduced six times, and the user was likely to find more useful sites in the second case.

### Meta Search Engines

The current content on the web is so vast that no search engine can explore more than about one-third of it. Meta-search engines tend to solve this problem by putting the users' query simultaneously at several search engines and directories. For example Chubba (http://chubba.whatuseek.com/) simultaneously searches AltaVista, Kanoodle, Infoseek, GoTo.com and Lycos. Other meta-search engines are Copernic, MonsterCrawler, Dogpile, SavvySearch, Metacrawler, and Ixquick. Thus the keyword "Toxicology" entered in one of the above meta-search engines is likely to return greater number of results than the same keyword in an ordinary search engine like AltaVista.

It is important to realize that unlike the individual search engines and directories, meta-search engines do not have their own databases; they merely send queries simultaneously to multiple Web search engines and/or Web directories, and return the results. Interestingly much of the information about Meta-search Engines can be obtained by going to a regular search engine (such as google.com) and searching for the keyword "Meta-Search Engines"!

## Online Theses And Dissertations

An interesting recent development is that a number of theses and dissertations submitted to various universities are now available online. They are known as ETDs (Electronic Theses and Dissertations). For more information one can usefully go to Online Dissertations (http://www.sti.unibas.ch/onlinediss.htm), University of Texas Online Dissertations (http://www.utexas.edu/ogs/rc/online.html) and Directory of ETDs Currently in Progress (http://etext.lib.virginia.edu/ETD/directory/browse.html). There has been an Online Dissertations Conference, which can be visited at http://lists.fsu.edu/pipermail/efps/2000-January/000783.html. Anil Aggrawal's Internet Journal of Forensic Medicine and Toxicology also regularly publishes theses and dissertations in full.

## Toxicology News Online, Newsgroups And Fora

***Internet is the world's greatest newsstand - but one where all the publications are jumbled together. Only one click might separate a New York Times article from an EarthFirst! press release.***

*-Jeffrey C. South, School of Mass Communications, Virginia Commonwealth University , in his paper "Online resources for news about toxicology and other environmental topics" Vol. 157 (2001), page 154*

Today much of the toxicology news is available online. Some of the sites one may want to visit are eLibrary tracker (http://ask.elibrary.com/), 1stHeadlines (http://www.1stHeadlines.com), Moreover.com (http://w.moreover.com/), Newspaper Association of America (http://www.naa.org) and Editor & Publisher magazine (http://www.editorandpublisher.com/editorandpublisher/index.jsp).

Another useful way to use the internet for information on toxicology would be to join specialized newsgroups. Known also as discussion groups or forums, they have been around almost since the dawn of the Internet.

In the early days of internet, newsgroups were used by scientists to post their questions (and answers) to the whole group. They are used much in the same way today. Today there are newsgroups dedicated to almost every conceivable subject under the sun. There are specialized newsgroups on subjects like astronomy, physics, chemistry, biology, wireless technology, computer programming; even on subjects like cactuses, black magic, zombies and so on.

Newsgroups can be construed as clubs (some prefer to view them as virtual coffee houses) with specialized memberships. Posting and receiving messages in newsgroups can be like chatting in a club or coffee house. A person with a nagging question can post his question in the group, and all registered and bonafide members of the group will be able to read the message.

There are some differences though. All communication is written and not verbal, as it is in an actual coffee house. But there are interesting additional benefits too. One main benefit is that you need not be present in the club simultaneously to discuss. Any member who comes (or in the more formal language "logs in") may post his message or question, and leave immediately. His message will remain in the club, as if it has been pasted on a billboard. Any new members coming in will find thousands of such posts "sticking" on the billboard. They may want to read all of them, or only a few. They may want to answer to a few of them, post their own messages and leave. They may even want to download all the information - including any pictures if they are there - for later offline viewing. Members who join late (may be years after the newsgroup was formed), will still be able to access all the earlier postings by going to the archives section.

There are a number of toxicology newsgroups which you may want to join. One is "bionet tox newsgroup", which is run by Dr. Charles A. Miller III. He can be contacted via Email at 4amiller@bellsouth.net or at rellim@tulane.edu. Details about this newsgroup are available at the following two sites.

http://www.bio.net/charters/toxicol http://www.bio.net/hypermail/toxicol/current

Another interesting toxicology newsgroup is being run by the first author of this paper. It is called "Criminal Poisoning", and deals with criminal poisoning, its history, notable and historical poisoners, exotic poisons used throughout history, history and romance of poisons, new and old poisons, famous court cases related to historic poisoning cases, forensic aspects of poisoning, forensic toxicology etc. Details about this newsgroup are available at the following site.

### http://groups.yahoo.com/group/cr_po

Information about how to join the group is available at the site itself. Alternatively requests can be E-mailed to the author at dr_anil@hotmail.com. One can also click on the following button to join the group.

Click to join cr_po

Christopher Basten (cbasten@statgen.ncsu.edu) of the North Carolina State University runs a good forensic forum, in which lot of toxicology issues are discussed too. There are about 900 members in this list and approximately 150 posts per month. One can mail Chris for details on how to become a member.

Alternatively just send a mail to MajorDomo@statgen.ncsu.edu with the following two lines in the body of the message (leave the subject line blank, because the automated program would not see the subject line at all).

**subscribe forens name@myisp.com**

end where name@myisp.com is your Email address. The whole process is run by an automated program called MajorDomo (note the word MajorDomo in the first part of the Email address). The word "end" in the second line tells MajorDomo to stop reading after the first line; otherwise it may get confused, if it "sees" any text after that (such as your signature file etc.). After you subscribe to the list, you will start getting all postings from members at the Email address you specified in the message. If after sometime you feel you no longer want to remain a member, just send another email to the same address, with the following two lines in the body of the message (again leave the subject line blank)

**unsubscribe forens name@myisp.com**

**end**

A visit to http://statgen.ncsu.edu/majordomo/usage.php, will enable one to get a number of other similar commands which will help one understand the newsgroup much better.

Daryl W. Clemens (dclemens@crimeandclues.com), a crime scene investigator from USA , started a very successful newsgroup in 1999. There are more than 2800 members till date, and more than 8000 posts. Information about it can be had at the group home page at http://groups.yahoo.com/group/forensic-science. Information about how to join the group is also available here.

National Library of Medicine (NLM)'s Division of Specialized Information Services (SIS) runs a small announcement list called "NLM-Tox-Enviro-Health-L". The purpose of the announcement list is to broadcast updates on SIS's resources, services, and outreach in toxicology and environmental health. The "NLM-Tox-Enviro-Health-L" Archives allow users to search list postings, and to modify subscription options. To subscribe to the NLM-Tox-Enviro-Health-L announcement list, one can send the following text in the body of an email to listserv@list.nih.gov

**SUBSCRIBE NLM-Tox-Enviro-Health-L your name**

## Starting Your Own Toxicology Newsgroups And Webpages

### Starting your own toxicology newsgroup

Imagine a club, where you can sit down in a relaxed atmosphere with the best toxicologists around the world, and discuss your cases. What a wonderful opportunity would it be to share your thoughts with the best in the field. You might say that one does get such an opportunity in seminars and conferences. However you get to attend only a handful of seminars and conferences every year, and not everyone is able to attend. On the contrary how nice it would have been, if you could get together *every day* , perhaps with your favorite snacks and a cup of coffee with you.

Impossible? No. In today's era of internet, newsgroups or message boards do just that. They can best be likened to clubs (which of course do not exist physically. Their presence is only virtual or online). However the big upside is that you can chat with all of your peers sitting right in your own study.

At present there are some 25 newsgroups on toxicology, ranging from serious subjects like "fish toxicology" and "arsenic project" to such mundane topics as "toxicologist in heels" which discusses the subject of toxicology in fact, fiction and literature, and its female practitioners! You may find that there is no newsgroup related to your specialty. You might be an expert in, say, genetic toxicology and may find that there is no existing newsgroup, especially dedicated to this topic. In cases such as these, you may want to start your own super specialized toxicology newsgroup. All you have to do is to go to http://groups.yahoo.com/ and click on the button saying "Start a new group". Just follow the online instructions after that. If the group has been successfully created, you would get a message like the one shown here.

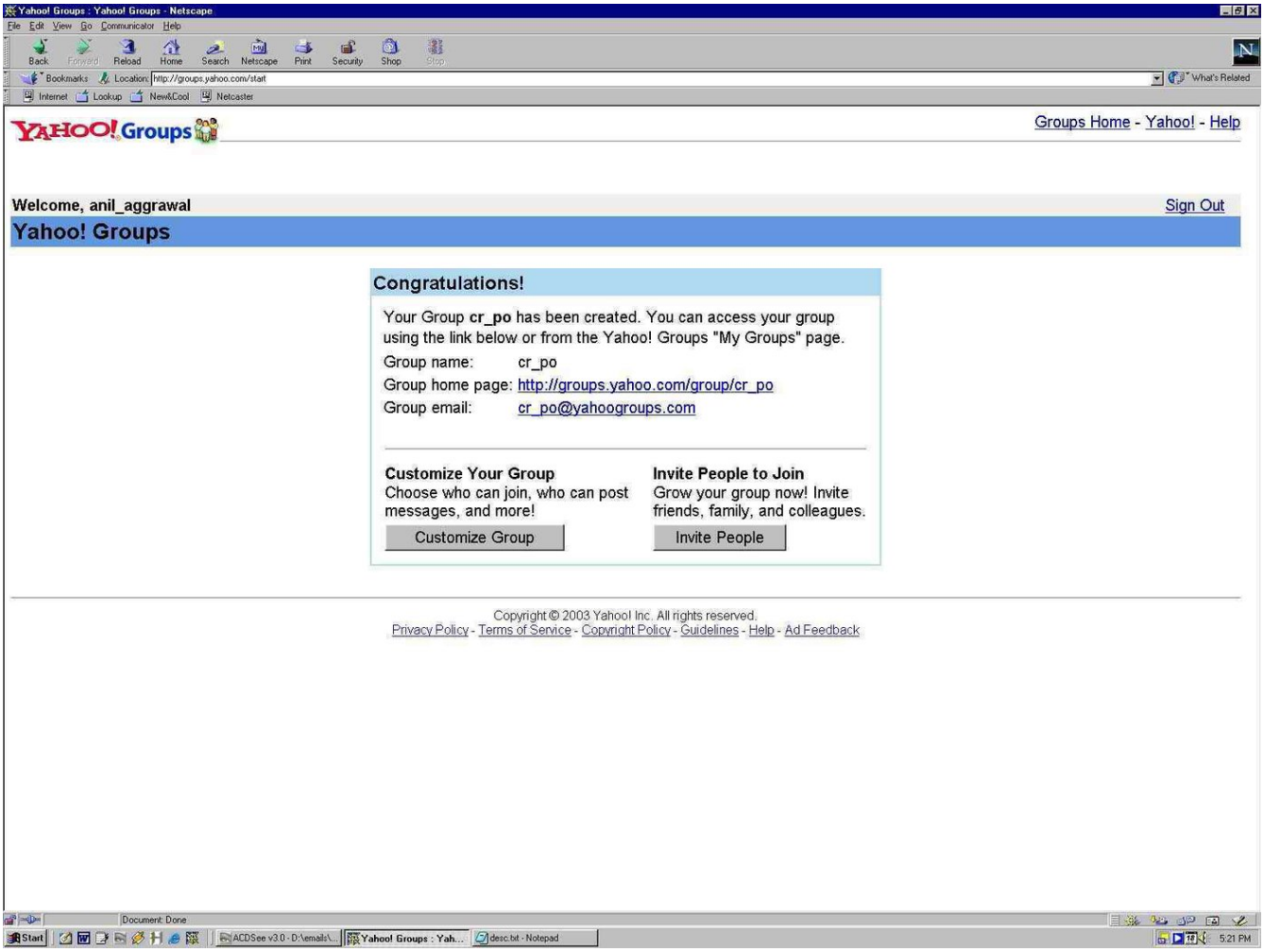



**Figure 3.** A congratulatory message is received once your group is successfully created.

After that you can customize the group and invite your colleagues to the group.

Another site where you can start your own toxicology newsgroup is:

http://www.proboards.com/index.html

Click on the button saying "Sign Up!" and fill up a form.

Or alternatively go straight to http://www.proboards.com/Home-Sign_Up!.html

Chatrooms are clones of message boards, with an important difference. In message boards or newsgroups, you leave a message in the club, and wait for an answer. This can come immediately

or as late as after a week. It all depends on when the other person "enters" (read "log in") the club, and even if he enters, whether he reads the message or not.

Chatrooms are actually round table conferences where you talk with other persons in real time. Here a number of toxicologists are sitting simultaneously and everyone may have something to say to the rest. The discussion can get really hot at times.

To create a chat room of your own, you can visit:

http://chatshack.net and click on "register"

Alternatively, simply visit http://chatshack.net/register.asp

### Your own toxicology web page

You may want to share your own experiences with your peers and colleagues by starting your own toxicology web page. Having a web page allows you to immediately interact with a lot of your professional colleagues from around the world. If you have a toxicological society, you may want to put it on the web. Not only does this help one put the society's activities on the web for everyone to see, it can attract more members from around the world.

You may want to hire a professional web designer to design your pages, but it would be far better - and economical - to design them yourself. Because that way one can change and modify your pages from time to time, according to one's own highly specialized needs. Communicating the same ideas to a professional designer (who will almost certainly not be a professional toxicologist) may be difficult, or sometimes impossible. Certainly it will slow down the rapidity with which one can change/update his WebPages.

To design your own web pages, one would need to learn HTML (Hyper Text Markup Language) in the beginning. HTML is a very simple language and the basics can be learnt within about a month. As time passes, one may want to learn additional features such as CSS (Cascading Style Sheets) and JavaScript. One can start with about 1 MB of web space. As the popularity of the website increases, one may want to expand the site gradually. A knowledge of advanced software such as FrontPage, Dreamweaver MX, Adobe GoLive, Adobe Photoshop, Ulead, Xara 3-D etc. can enable one to design really jazzy and attractive WebPages. A number of free utilities, such as free javascripts, applets etc are available on the net also and can easily be downloaded.

Starting a toxicology newsgroup is far more easier than starting a toxicology web page, because in the former, no technical knowledge regarding HTML, javascripts, or CSS etc is required. One just needs to have the basic knowledge about internet. If one is unfamiliar with HTML, it is a good idea to start a newsgroup first. As one gets comfortable with the web and internet, one may think about learning HTML and designing one's own pages.

## Conclusion

Toxicologists can use the internet to their advantage in many ways. Not only can they search the internet for relevant information, but can provide information to others through their own web pages and toxicology discussion fora. Researches around the world can communicate much more easily and freely. Data from around the world can be compared, collated and integrated much more easily. It is time toxicologists around the world got together and started using the internet for their advantage.

## Further Reading

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