

Abstract Sifter User Guide, Version 6.0

Availability: The Abstract Sifter and documentation is freely available for download at https://gaftp.epa.gov/COMPTOX/Sustainable_Chemistry_Data/Chemistry_Dashboard/Abstract_Sifter/AbstractSifter.zip

This beta version of 6.0 not yet available through Dashboard download!

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Abstract Sifter User Guide – Version 6.0

This user guide describes the functionality of the PubMed Abstract Sifter. The reader is invited to download the tool from the freely accessible ftp site and follow along:

https://gaftp.epa.gov/COMPTOX/Sustainable_Chemistry_Data/Chemistry_Dashboard/Abstract_Sifter/AbstractSifter.zip Version 6.0 not publicly available!

This document provides guidance on the use of the Abstract Sifter through a series of screen shots showing the most common tasks in the tool followed by some helpful tips.

What's new in version 6?

Wait a minute ... read this first:

As the Abstract Sifter grows it may get more sheets. If this is confusing or irritating, please feel free to hide the sheets you don't use or don't use often. This might simplify your life, which is a good thing. To hide sheets, right click on the sheet tab you want to hide at the bottom and when the menu pops up, click on Hide. To unhide, click on any sheet tab and then Unhide where you'll be given a selection of hidden sheets to unhide.

Version 6 has one new major function and a few smaller nice-to-have things.

- Term Expansion – this feature allows the end user to compile a list of terms to be mapped to or expanded by (however you want to look at it) another term. This is an opportunity to use an ontology or just a set of desired terms and see how often they appear in your corpus and to find them quickly. This feature is learned best by examples so check out the section below.
- If two notes are taken on the same citation and the yes / no / maybe designation are not the same, the Highlight Noted PMIDs function will color the PMID purple. This feature is useful if you are combining Notes from different researchers and your team wants to find and resolve differences.

In case you didn't know, Version 5.6 had features that facilitate larger, more complex projects.

- The Log sheet now allows the user to select rows and click on Run in Batch. When Batch is selected, each selected query will be run in turn and the results appended.
- The Landscape sheet has a new feature that allows the user to select cells and then click on More Stuff, then Send to Log. On the Log sheet the corresponding queries will be seen in italics (meaning they have not yet been run) and from there the rows can be selected and run in batch. The preferred name value (column B) will be put into column F where it is called the Batch Tag. When a query on the Log sheet is run in batch, the Batch Tag will be appended to the rows retrieved on the Main sheet. The More Things button on the Main sheet has the option to Summarize the row counts by this Batch Tag.

Let's start!

First open the Abstract Sifter file AbstractSifter_v5.7.xlsm. A security warning may appear. If so, be sure to enable content as shown in Figure 1.

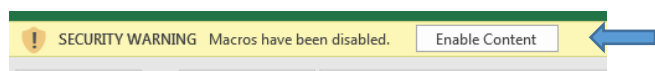


Figure 1. Enable macros upon opening

Once open you will see that the Abstract Sifter Excel file consists of 11 sheets. Each sheet is described briefly in the table below.

Sheet name	Sheet Function
ReadMe	Basic information on the sifter with links to more documentation
Main	Starting point for PubMed queries and for sifting
Abstract	The sheet where the citation abstract is shown

Notes	Notes and tags are inserted here
Log	Log of every query run on Main sheet
PathwayQueries	Repository of sample queries to use in research disease or treatment pathways (e.g., AOPs)
SampleQueries	Repository of sample queries to use as starting points
Landscape	High level view of literature for entities
CuratedLists	A place to keep lists of chemicals or other entities
TermExpand	Mapping terms to higher level concepts

The Abstract Sifter is growing. If you find the number of sheets onerous, hide (or even delete) the ones you don't use. For instance, the sheet CuratedLists is pretty specialized. Feel free to hide it and unclutter your workspace. To hide a sheet, right click on the tab at the bottom, then click on Hide. To unhide, click on any sheet, right click and then click on Unhide. You'll be give a list of hidden sheets to unhide. If you don't think you'll use the MeSH Mine function, delete the hidden sheet MappingsHide. You can also freely change the order of the sheets.

The Abstract Sifter you open is likely to have rows in it from previous use. These are left as examples, but they may be deleted. In the Sifter, it is generally best to select an entire row and then click on the delete button in the Excel toolbar or right-click and then delete.

Main Sheet

The Main sheet is where the basic functionality of Abstract Sifter occurs, including functions we call "sifting". To begin using the Abstract Sifter, the end-user clicks on the *Query PubMed* button at the top of the screen in the Main sheet. A form is displayed in which the end-user types a PubMed query of interest (Figure 2). In the example, we are showing a very simple query: "chlorpyrifos", but these queries can be more complex. The text that the user enters into the box is sent to PubMed, so all

PubMed syntax rules apply. (For a review of this syntax, visit

<https://www.ncbi.nlm.nih.gov/books/NBK3827/>) NOTE: NLM changed PubMed early 2020 and

reprogrammed the search algorithms. Since then, the search algorithms used by the web services do not return the exact counts returned by the PubMed web site.

Note also, that the end-user can optionally append the result of a query to the records currently on the Main sheet.

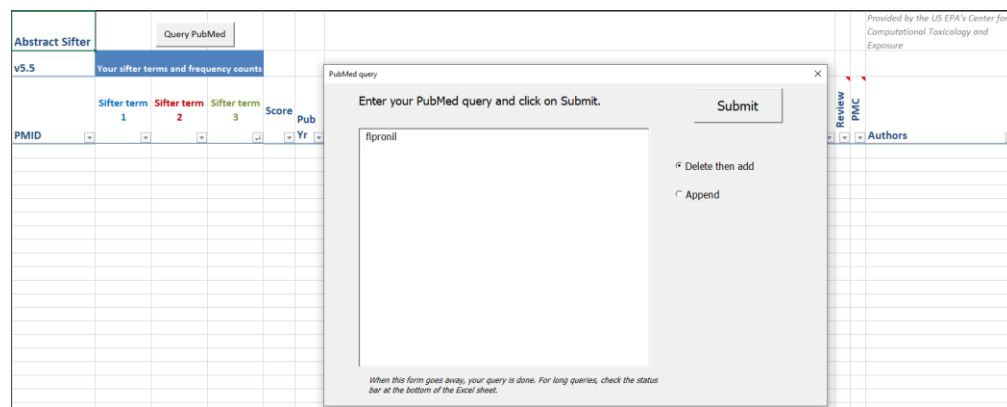


Figure 2. Running a PubMed query

When finished entering the query, the user clicks on *Submit* and the query is packaged by a Visual Basic Application (VBA) into an e-utility command that is passed to the NCBI (National Center for Biotechnology Information) web services. (Note that using Sifter Query PubMed capability requires internet access.) The first response returned by the utility is the number of articles found. (Figure 3) This number is displayed, and the user is asked if he/she want to continue. If the number of articles is over 10,000, the query will not be run and the user is encouraged to refine the query to return fewer records.

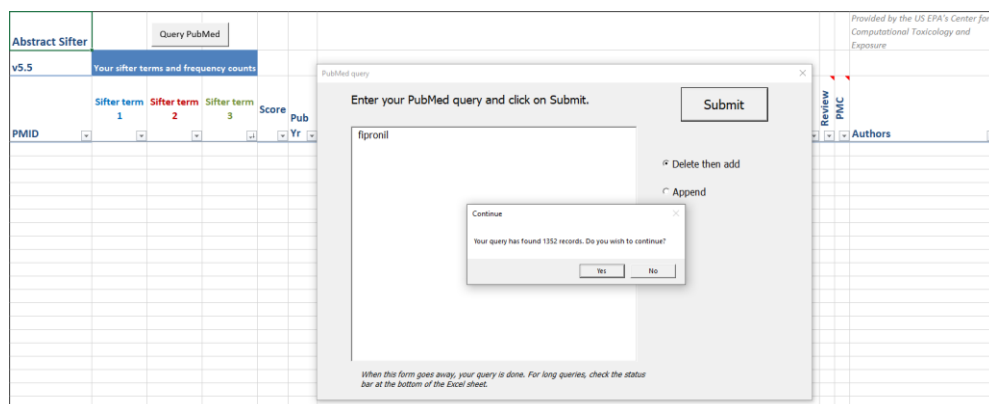


Figure 3. Responding to PubMed

If the returned results are fewer than 10,000 and the user indicates he/she wants to continue, the articles are downloaded from NCBI by Excel, and regular expressions are used to parse the citations for title, abstract, authors, publication year, journal, and PubMed identifier. Each record returned is inserted into a row in the Main sheet. Any rows in the Main sheet from a previous query are deleted unless the end-user chose the Append option. The Append option adds the new results to the end of the Main sheet. You can watch the status bar at the bottom of Excel to see how far along the retrieval process is. For longer queries, a cancel form will appear and the user can use it to cancel the process.

Abstract Sifter	Query PubMed			PubMed query run: fipronil				Provided by the US EPA's Center for Computational Toxicology and Exposure	
v5.5	Your sifter terms and frequency counts								
	Sifter term 1	Sifter term 2	Sifter term 3	Score	Pub	Take Group Notes	More things	Review	PMC
PMID					Yr Title				Authors Journal
32791279					2020 Assessments on the molecular toxic mechanisms of fipronil and neonicotinoids with glutathione transferase Phi8.				Xie Y, Hou X International
32784929					2020 Chronic Administration of Fipronil Heterogeneously Alters the Neurochemistry of Monoaminergic Systems in the Rat Brain.				Bharatiya R, Chagraoui A, De Duurwa International
32783869					2020 Mutagenic, genotoxic and morphotoxic potential of different pesticides in the erythrocytes of Podocnemis expansa neonates.				de Oliveira JSP, Vieira LG, Carvalho W The Science
32783180					2020 Development of an on-site early warning water quality monitoring system for pesticide detection by absorption and photo-indu				Bakhoum JP, Diop NA, Bodian HT, En Environmen
32772290					2020 Ginseng attenuates fipronil-induced hepatorenal toxicity via its antioxidant, anti-apoptotic, and anti-inflammatory activities in r				Abd Eldaim MAA, Abd El Latif AS, Has Environmen
32756773					2020 In vitro acaricidal activity of different ectoparasiticide classes against Amblyomma sculptum larvae.				Borges DA, Cid YP, Avelar BR, Ferreir Revista bras
32751827					2020 Chemo-Protective Potential of Cerium Oxide Nanoparticles against Fipronil-Induced Oxidative Stress, Apoptosis, Inflammation a				Saleh H, Nassar AMK, Noreldin AE, Sa Molecules
32736585					2020 Efficacy of a low dose fipronil bait against blacklegged tick (Ixodes scapularis) larvae feeding on white-footed mice (Peromyscu				Poch DMD, Franczkowiak G, Clarke T, P Parasites &
32736301					2020 Does bathing affect tick and flea burdens and ectoparasiticide effectiveness of a spot-on formulation (fipronil + (S)-methoprene				Cruz BC, Teixeira WFP, Gomes LVC, hVeterinary p
32723848					2020 Preclinical Transplacental Transfer and Pharmacokinetics of Fipronil in Rats.				Chang YN, Tsai TH Drug metabo
32711767					2020 Synergic effect of a quinuclidine benzamide complexed with borane, the LMA10233, in combination with seven pesticides.				Taillebois E, Carteau A, Graton J, Le Pesticide bi
32711758					2020 Fitness cost, realized heritability and stability of resistance to spiromesifen in house fly, Musca domestica L. (Diptera: Muscidae)				Alam M, Shah RM, Shad SA, Binyame Pesticide bi
32711309					2020 Organic and conventional agriculture: Conventional rice farming causes biochemical changes in Astyanax lacustris.				Bergmann FB, do Amaral AMB, Volcai The Science
32697393					2020 Fleas infesting cats and dogs in Great Britain: spatial distribution of infestation risk and its relation to treatment.				Cooper AR, Nixon E, Rose Vineer H, A Medical and
32683200					2020 Insights into the synergistic mechanism of target resistance: A case study of N. lugens RDL-GABA receptors and fipronil.				Li T, Zhou C, Zheng N, Yang H, Kuang Biophysical
32651782					2020 The protective effects of Terminalia laxiflora extract on hepato-nephrotoxicity induced by fipronil in male rats.				Khalaf AA, Ibrahim MA, Galal MK, Abi Environmen
32574918					2020 Occurrence of the insecticide fipronil and its degradates in indoor dust from South, Central, and North China.				Shi L, Jiang Y, Wan Y, Huang J, Meng The Science
32569399					2020 Experimental removal of invasive Africanized honey bees increased breeding population size of the endangered Lear's macaw.				Pacifico EC, Estefanach CA, Filadelfo T Pest manag

Figure 4. Results from PubMed query - before sifting

At this point the results of the query are stored in the Main sheet and can be browsed like any other data in a spreadsheet (Figure 4); however, the most effective way to find articles of interest is to use the

innovative sifter functionality. To demonstrate this functionality, we will continue to use our example of fipronil.

Let us suppose at this point that we are looking for dose-response toxicity data for fipronil. We type the term “fipronil” in cell B3, “toxic” in C3, and “mg/kg” in D3. As we finish typing and move to the next cell, the Abstract Sifter will count the occurrences of the terms in the title, abstract, and key words combined. The citations can then be sorted by these counts, either individually or by the total. Figure 5 shows what the Sifter looks like when these terms have been entered into cells B3, C3, and D3 and then the entries sorted by occurrence counts of “fipronil” in descending order. PubMed 12442503 has 26 occurrences of “fipronil”, 13 of “toxic”, and four of “mg/kg”. This article indeed describes a toxic doses of the chemical in various animal species.

	A	B	C	D	E	F	G	H	I	J
1	Abstract Sifter		Query PubMed			PubMed query run: fipronil				Provided by the US EPA's Center for Computational Toxicology and Exposure
2	v5.5	Your sifter terms and frequency counts								
		fipronil	toxic	mg/kg	Score	Pub	Take Group Notes	More things	Review PMC	
3	PMID					Yr	Title		Authors	Journal
4	32723848	26	1		27	2020	Preclinical Transplacental Transfer and Pharmacokinetics of Fipronil in Rats.		Chang YN, Tsai TH	Drug metab
5	31278966	23	3		26	2019	In vitro inhibition of human CYP2D6 by the chiral pesticide fipronil and its metabolite fipronil sulfone: Prediction of pesticide-dr		Carrão DB, Habenchus MD, de Albuquerque	Toxicology
6	30718154	23	1		24	2019	Distribution of fipronil in humans, and adverse health outcomes of in utero fipronil sulfone exposure in newborns.		Kim YA, Yoon YS, Kim HS, Jeon SJ, Coli-Internationa	
7	27067106	23	10		33	2016	Fipronil sulfone induced higher cytotoxicity than fipronil in SH-SY5Y cells: Protection by antioxidants.		Romero A, Ramos E, Ares I, Castellán-Toxicology	Int
8	12442503	21	13	4	38	2003	Fipronil: environmental fate, ecotoxicology, and human health concerns.		Tingle CC, Rother JA, Dewhurst CF, LeReviews of e	
9	30521755	21	0		21	2019	Quantitative Detection of Fipronil and Fipronil-Sulfone in Sera of Black-Tailed Prairie Dogs and Rats after Oral Exposure to Fipro		Wang K, Vasyileva N, Wan D, Eads D,Analytical ch	
10	21615307	21	0		21	2011	Thyroid function tests in persons with occupational exposure to fipronil.		Herin F, Boutet-Robinet E, Levant A, [Thyroid : off	
11	19731660	21	0		21	2009	Fipronil and its degradates in indoor and outdoor dust.		Mahler BJ, Van Metre PC, Wilson JT, [Environm	
12	27037470	20	5		25	2016	The toxicity, bioaccumulation, elimination, conversion of the enantiomers of fipronil in Anodonta woodiana.		Qu H, Ma RX, Liu DH, Jing X, Wang F, Journal of he	
13	22447239	20	2		22	2012	CYP450-dependent biotransformation of the insecticide fipronil into fipronil sulfone can mediate fipronil-induced thyroid disrupt		Roques BB, Lacroix MZ, Puel S, GayraToxicologica	
14	18200855	20	0		20	2007	Enantioselective microbial transformation of the phenylpyrazole insecticide fipronil in anoxic sediments.		Jones WJ, Mazur CS, Kenneke JF, GarrEnvironm	
15	27614034	19	6		25	2016	Environmental behavior of the chiral insecticide fipronil: Enantioselective toxicity, distribution and transformation in aquatic ec		Qu H, Ma RX, Liu DH, Gao J, Wang F, Water resea	
16	15135087	19	0		19	2004	In vitro metabolism of fipronil by human and rat cytochrome P450 and its interactions with testosterone and diazepam.		Tang J, Amin Usmani K, Hodgson E, RChemico-bio	
17	22045597	18	0		18	2012	Adsorption, transport and degradation of fipronil termiticide in three Hawaii soils.		Shuai X, Chen J, Ray C	Pest manag

Figure 5. After sifter terms were entered into cells B3, C3, D3 and sorting on B3

Abstract Sheet

To see the abstract for any of the retrieved articles, we can either click on the PubMed ID hyperlink to be taken to PubMed, or we can double-click on any other cell in the row for this article. This action brings us to the Abstract sheet where the abstract is displayed along with other article meta-data like title and authors (Figure 6).

Abstract with highlights		<- Main		Add Note		See Notes ->		Like this?					
PMID: 12442503		PubYr		Authors		Journal		Volume Issue					
Title: Fipronil: environmental fate, ecotoxicology, and human health concerns.		2003		Tingle CC, Rother JA, Dewhurst CF, Lauer S, King WJ		Reviews of environmental		176					
Title and Abstract: <p>Fipronil: environmental fate, ecotoxicology, and human health concerns. ABSTRACT: Fipronil is a highly effective, broad-spectrum insecticide with potential value for the control of a wide range of crop, public hygiene, amenity, and veterinary pests. It can generally be applied at low to very low dose rates to achieve effective pest control. Application rates vary between 0.6 and 200 g a.i./ha, depending on the target pest and formulation. It belongs to the phenyl pyrazole or fiprole group of chemicals and is a potent disrupter of the insect central nervous system via interference with the gamma-aminobutyric acid (GABA-) regulated chloride channel. Fipronil degrades slowly on vegetation and relatively slowly in soil and in water, with a half-life ranging between 36 hr and 7.3 mon depending on substrate and conditions. It is relatively immobile in soil and has low potential to leach into groundwater. One of its main degradation products, fipronil desulfinyl, is generally more toxic than the parent compound and is very persistent. There is evidence that fipronil and some of its degradates may bioaccumulate, particularly in fish. Further investigation on bioaccumulation is warranted, especially for the desulfinyl degradate. The suitability of fipronil for use in IPM must be evaluated on a case-by-case basis. In certain situations, fipronil may disrupt natural enemy populations, depending on the groups and species involved and the timing of application. The indications are that fipronil may be incompatible with locust IPM; hence, this possibility requires further urgent investigation. It is very highly toxic to termites and has severe and long-lasting negative impacts on termite populations. It thus presents a long-term risk to nutrient cycling and soil fertility where termites are "beneficial" key species in these ecological processes. Its toxicity to termites also increases the risk to the ecology of habitats in which termites are a dominant group, due to their importance as a food source to many higher animals. This risk has been demonstrated in Madagascar, where two endemic species of lizard and an endemic mammal decline in abundance because of their food chain link to termites. Fipronil is highly toxic to bees (LD50 = 0.004 microgram/bee), lizards [LD50 for Acanthodactylus dumerilii (Lacertidae) is 30 micrograms a.i./g bw], and gallinaceous birds (LD50 = 11.3 mg/kg for Northern bobwhite quail), but shows low toxicity to waterfowl (LD50 > 2150 mg/kg for mallard duck). It is moderately toxic to laboratory mammals by oral exposure (LD50 = 97 mg/kg for rats; LD50 = 91 mg/kg for mice). Technical fipronil is in toxicity categories II and III, depending on route of administration, and is classed as a nonsensitizer. There are indications of carcinogenic action in rats at 300 ppm, but it is</p>													

Figure 6a. An abstract with highlighted sifter terms.

There are several aspects of the Abstract sheet that are important to note. First, the sifter terms in the abstract are highlighted. The font colors reflect the colors of the fonts in cells B3, C3, and D3 entered into the Main Sheet. This highlighting makes the reading the abstract easier by drawing attention to sentences that might be of more interest.

With version 3 of the Abstract Sifter, the *Like this?* Button was added to the top of the Abstract Sheet. Click on this button allows the user to find articles in PubMed that are similar to the article on the Abstract sheet or find articles in PubMed Central that cite that article in question. (Figure 6b.) These functionalities are likely familiar as they are offered on the PubMed Entrez web site. The results can be appended to results already on the Main sheet. A colorization feature has been added to make the titles either yellow or green. This way the user can see which rows were from the original query and which were retrieved from the Like this functionality.

The screenshot shows the 'Abstract with highlights' sheet in the AbstractSifter application. The 'Like this?' button is highlighted, and a modal window titled 'Like this article?' is open. The modal offers options to 'Get 200 articles in PubMed most like this one.', 'Get 42 articles that cite this one in PubMed Central.', 'Delete then add', or 'Append'. It also includes a 'Submit' button, an 'Exit' button, and a color selection option (None, Yellow, Green).

Figure 6b. Clicking on the Like this? Button on the Abstract Sheet.

Sifting the results through specifying sifter terms in B3, C3, and D3 can be repeated as many times as the user wishes. Similarly, new PubMed queries can be run, altered, rerun. There are no restrictions on either of these activities other than the 10000 record return limit.

Notes Sheet

Given the dynamic nature of the Sifter, many users find it helpful to be able to make notes on articles that they want to track. There are two ways using the Sifter to take notes: one way is through the Main sheet, and the other way starts with the Abstract sheet. To return to our case study, let us say that we have found a set of articles on the Main sheet that we know we need to read in depth. We can select these articles and then click on the *Take Group Notes* button. A form appears where we can enter information into fields called Tag and Notes. These elements are self-defined. We can also click on *yes*, *no*, or *maybe*. The note-taker can enter her/his initials or name in the Who field. This set of variables is a quick way to associate articles with a note. Notice that these choices each come with a color (yes-green, no-red, and maybe-yellow). Entering any of these fields is optional. (Figures 7 and 8.) When we

click on the *OK* button, each article selected will be inserted into the Notes page with the corresponding information (Figure 9) and the PubMed ID (PMID) on the Main sheet will be colored.

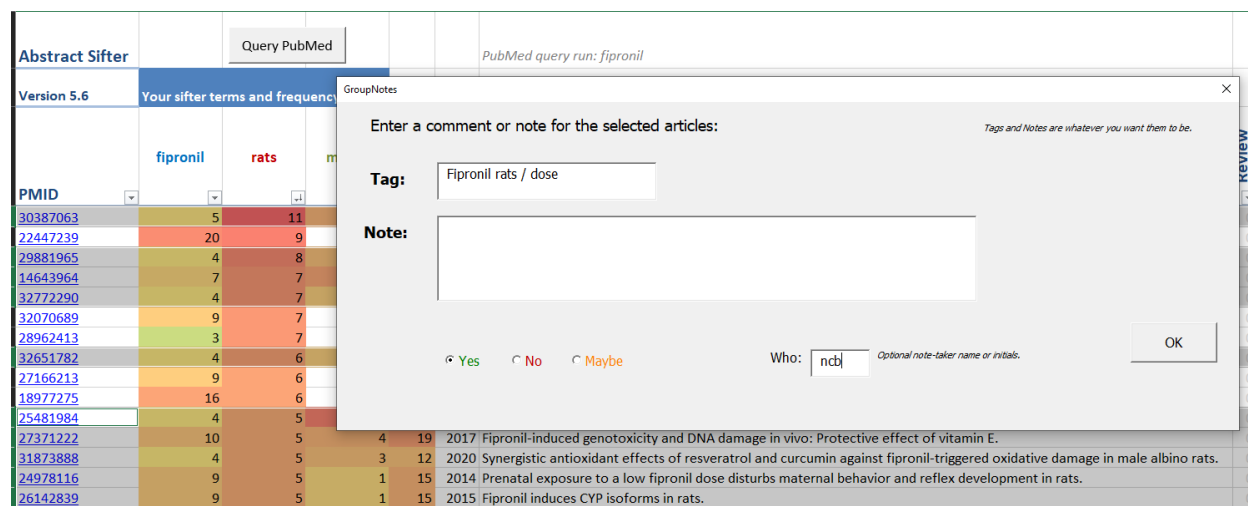


Figure 7. Taking group notes.

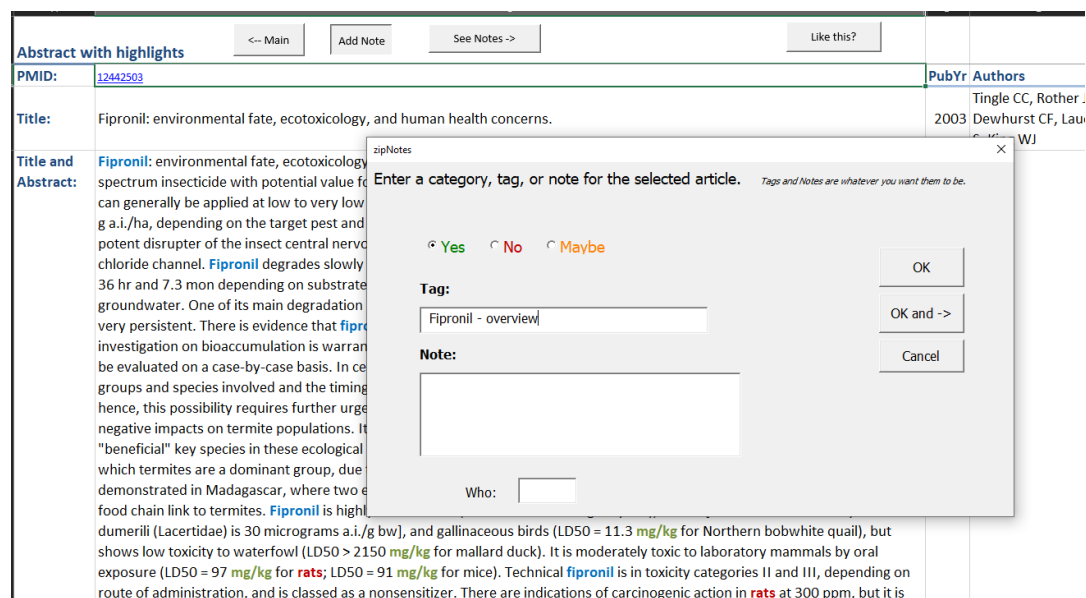


Figure 8. Taking single notes on the Abstract sheet.

My Notes									
Double-click on row to curate									
PMID	yes	no	maybe	Who	Tag	Note	PubYr	Title	Authors
30387063	1	0	0	ncb	Fipronil rats / dose		2019	Hepatoprotective activity of Uncaria tomentosa extract against sub-chronic	Elgawish RA, Abdelrazek HMA, Ismail SAA,
29881965	1	0	0	ncb	Fipronil rats / dose		2018	Thymoquinone and diallyl sulfide protect against fipronil-induced oxidative	Abdel-Daim MM, Shaheen HM, Abushouk /
14643964	1	0	0	ncb	Fipronil rats / dose		2004	Reproductive adverse effects of fipronil in Wistar rats.	Ohi M, Dalsenter PR, Andrade AJ, Nascimer
32772290	1	0	0	ncb	Fipronil rats / dose		2020	Ginseng attenuates fipronil-induced hepatorenal toxicity via its antioxidant	Abd Eldaim MAA, Abd El Latif AS, Hassan A,
32651782	1	0	0	ncb	Fipronil rats / dose		2020	The protective effects of Terminalia laxiflora extract on hepato-nephrotoxi	Khalaf AA, Ibrahim MA, Galal MK, Abdallah
25481984	1	0	0	ncb	Fipronil rats / dose		2015	Use of electroencephalography (EEG) to assess CNS changes produced by	Freeborn DL, McDaniel KL, Moser VC, Herr I
27371222	1	0	0	ncb	Fipronil rats / dose		2017	Fipronil-induced genotoxicity and DNA damage in vivo: Protective effect	Badgujar PC, Selkar NA, Chandratte GA, Pav
31873888	1	0	0	ncb	Fipronil rats / dose		2020	Synergistic antioxidant effects of resveratrol and curcumin against fipronil	AlBasher G, Abdel-Daim MM, Almeer R, Ibr
24978116	1	0	0	ncb	Fipronil rats / dose		2014	Prenatal exposure to a low fipronil dose disturbs maternal behavior and r	Udo MS, Sandini TM, Reis TM, Bernardi MM
26142839	1	0	0	ncb	Fipronil rats / dose		2015	Fipronil induces CYP isoforms in rats.	Caballero MV, Ares I, Martinez M, Martinez
12442503	1	0	0		Fipronil - overview		2003	Fipronil: environmental fate, ecotoxicology, and human health concerns.	Tingle CC, Rother JA, Dewhurst CF, Lauer S,

Figure 9. The Notes page. Remember to save your workbook.

The second option for note taking starts with the Abstract Sheet. (Figure 8) The “Add Note” button in the top row allows notes to be inserted into the Notes Sheet using the same form used to add Group Notes described above.

The note-taking can be used to help keep track of which citations have been read and evaluated and which have not. On the Main sheet the PMIDs can be sorted by the noted color using the built-in Excel sorting functionality. (Figure 10) The More Things button on the Main sheet will allow the end-user to delete duplicates and highlight noted citations with colorization.

Abstract Sifter									
Version 5.6									
Your sifter terms and frequency counts									
PMID	fipronil	rats	mg/kg	Score	Pub	Yr			
27614034	19	0	0	19	2016	6			
9860498	18	0	0	18	1998	8			
22045597	18	0	0	18	2012	4			
12442503	21	3	4	28	2003	6			
27371222	10	5	4	19	2017	6			
24978116	9	5	1	15	2014	6			
26142839	9	5	1	15	2015	6			
14643964	7	7	5	19	2004	6			
30387063	5	11	4	20	2019	6			
25481984	4	5	8	17	2015	6			
29881965	4	8	3	15	2018	7			
31873888	4	5	3	12	2020	3			
32772290	4	7	2	13	2020	3			
32651782	4	6	2	12	2020	3			
32723848	26	5	0	31	2020	3			
27067106	22	0	0	22	2016	6			

Figure 10. After clicking on More things, then and then sorting by color

The user can make changes to the Notes sheet by editing, adding or deleting rows below row 2. In version 4 of the Abstract Sifter, double-clicking on a row in the Notes sheet brings up a curation form (Figure 10a). Here the end-user can enter and update tags, notes. Text in the large box can be selected and dragged to any of the smaller tag and notes boxes. The Refresh button brings the title and abstract back in and refreshes the view. The purpose of this form is to allow quick easy extraction of information from the abstract into separate fields. The copy button sends the elements of the citation and your notes to the clipboard; then you can open up Word and paste the clipboard contents there. The Notes sheet can be copied, printed, or the Notes can be exported to a text file for further import into other tools like Word.

New in this version is the capability to attach a pdf. Before you can attach a pdf, the file must reside on your computer. Click the Attach Local PDF button and find the pdf. You can open the pdf by clicking on the Open button or on the pdf hyperlink in column U. Note that while Abstract Sifter files can be shared with colleagues, the pdfs are local and specific to one machine.

The screenshot displays the 'Curate' window of the Abstract Sifter software. On the left, a portion of the 'My Notes' spreadsheet is visible, showing columns for PMID, Yes/No/Maybe status, and Tag. The main window is titled 'Curate' and contains the following elements:

- PMID:** 14643964
- Year:** 2004
- Title:** Reproductive adverse effects of fipronil in Wistar rats.
- Authors/Journal:** Ohi M, Dalsenter PR, Andrade AJ, Nascimento AJ | Toxicology letters Vol: 146 Iss: 2, pp: 121-7
- Buttons:** Refresh->, Copy (floppy disk icon), Attach local pdf, Open.
- Tag:** A text box containing 'Fipronil rats / dose' with buttons OK (Update and exit), OK-> (Update and next), and Exit (Just exit).
- Notes:** A large text area containing the abstract text, with buttons Yes, No, and Maybe at the bottom.
- More Notes (find on col L):** A text box for additional notes.

Figure 10a. Double-clicking on a row in the Notes sheet brings up a curation form.

Log / Batch sheet

The Log sheet keeps track of the queries you have run. The Abstract Sifter routines insert a row into the sheet every time you complete a query. These queries can be viewed and rerun. To rerun a query, simply double-click on it. (Figure 11.) Starting with version 5.6 a new feature called Batch Run has been implemented to allow the user to run multiple queries and append the results from each on the Main sheet. To run in batch, select rows and click on the Run in Batch button. A Batch Tag can be added or modified on the Log sheet. This tag will be added to the Main sheet results and used to help summarize the results of multiple runs. This summary functionality is accessible on the Main sheet through the More things button.

Delete any or all rows after Row 2 if you want to clear old entries.

Log / Batch		← Main Run in batch		Note: Feel free to delete
Date	Record Ct	Query Used (double-click on query to rerun)	Batch Tag	
1/6/2021 10:42	1417	fipronil		
1/6/2021 10:39	200	Articles like 32864299		
1/5/2021 15:37	1536	covid-19 AND chloroquine	Triadimenol	
1/5/2021 15:26	44	"Triadimenol"[tw] OR "Spinnaker"[tw] OR "Triafol"[tw] AND (toxicity)	Triadimenol	
1/5/2021 15:26	5	71441-28-6 OR 4-(2-(5,6,7,8-Tetrahydro-5,5,8,8-tetramethyl-2-naphthenyl)-1E-propen-1-yl)benzoic acid OR 4-(2-(5,6,7,8-Tetrahydro-		
1/5/2021 15:26	5	71441-28-6 OR 4-(2-(5,6,7,8-Tetrahydro-5,5,8,8-tetramethyl-2-naphthenyl)-1E-propen-1-yl)benzoic acid OR 4-(2-(5,6,7,8-Tetrahydro-		
1/5/2021 15:26	44	"Triadimenol"[tw] OR "Spinnaker"[tw] OR "Triafol"[tw] AND (toxicity)	Triadimenol	
1/5/2021 15:25	27	"TTNPB"[tw] OR "Arotinoid acid"[tw] OR "Ro 13-7410"[tw] AND (toxicity)	4-(2-(5,6,7,8-Tetrahydro-	
1/5/2021 15:14	33	"120-21-8"[tw] OR "4-(Diethylamino)benzaldehyde"[tw] OR "4-(N,N-Diethylamino)benzaldehyde"[tw] OR "4-Di4-(Diethylamino)benzaldehyde"		
1/5/2021 14:56	33	"120-21-8"[tw] OR "4-(Diethylamino)benzaldehyde"[tw] OR "4-(N,N-Diethylamino)benzaldehyde"[tw] OR "4-Di4-(Diethylamino)benzaldehyde"		
1/5/2021 14:56	27	"TTNPB"[tw] OR "Arotinoid acid"[tw] OR "Ro 13-7410"[tw] AND (toxicity)	Triadimefon	
1/5/2021 14:56	412	"Triadimefon"[tw] OR "Bayleton"[tw] OR "TDF"[tw] OR "Azocene"[tw] OR "Triadimephon"[tw] OR "Tripinaclozaz	Triadimefon	
1/5/2021 14:56	27	"TTNPB"[tw] OR "Arotinoid acid"[tw] OR "Ro 13-7410"[tw] AND (toxicity)	4-(2-(5,6,7,8-Tetrahydro-	
1/5/2021 14:56	1257	"1071-83-6"[tw] OR "Glyphosate"[tw] OR "N-(phosphonomethyl) glycine"[tw] OR "Glyphosat"[tw] OR "N-(Phosph	Glyphosate	
1/5/2021 14:55	27	"TTNPB"[tw] OR "Arotinoid acid"[tw] OR "Ro 13-7410"[tw] AND (toxicity)	4-(2-(5,6,7,8-Tetrahydro-	
1/5/2021 12:43	412	"Triadimefon"[tw] OR "Bayleton"[tw] OR "TDF"[tw] OR "Azocene"[tw] OR "Triadimephon"[tw] OR "Tripinaclozaz	Triadimefon	
1/5/2021 12:43	33	"120-21-8"[tw] OR "4-(Diethylamino)benzaldehyde"[tw] OR "4-(N,N-Diethylamino)benzaldehyde"[tw] OR "4-Di4-(Diethylamino)benzaldehyde"		

Figure 11. View of the Log sheet

Landscape sheet

The Landscape sheet provides an overview of the literature to the user for a set of entities, for example, a list of chemicals or genes. Figure 12 shows an example of a Landscape sheet built by a researcher interested in the toxicity of a particular set of chemicals. Let's take a look at that first. Queries designed to find the chemicals of interest are entered into Column C and in this case, a short version of the chemical name is in Column B. The queries in Row 3 are typical ones used in searching for articles about different kinds of chemical toxicity. We will refer to these queries as subject matter queries. (Note: Column A on the Landscape sheet is often hidden. Go ahead and unhide it and use it when you have a DSSTox chemical identifier.)

The premise behind the design of the Landscape sheet is very simple: PubMed queries will be built by taking the values in Column C (in this example chemical names and corresponding CAS numbers) and appending this query text to the subject matter query text in Row 3 with an " AND " in between the two query parts.

B		C				E	F	G	H	I	J
1	Landscape View										
2		Update Article Counts	View / hide queries	Heat Map by column	Heat Map by row						
3		Chemical queries				Subject matter queries →					
3		Subject queries:				(dna/drug effects OR DNA Damage OR chromosome aberrations OR	neoplasms or cancer OR carcinogenesis OR precancerous	(reproduction AND (toxicity OR abnormal OR adverse effects))	toxicity OR (Nervous system diseases and chemical y induced) OR	(congenital abnormalities OR Prenatal Exposure Delayed Effects)	respiratory hypersensitivity OR respiratory sensitization OR Bronchial
5	Preferred Name	Chemical / Entity query				Genetox	Cancer	ReproTox	NeuroTox	DevTox	Respiratory sensitization
6	PERC/TCE	Tetrachloroethylene[majr]				42	1152	39	68	14	22
7	Tripropylene glycol	Tripropylene glycol OR 24800-44-0				4	7	0	0	0	0
8	Tetrachlorophthalic anhydride	Tetrachlorophthalic anhydride				1	0	0	1	0	11
9	Linalool	Linalool				41	78	5	157	25	20
10	TBBPA	Tetrabromobisphenol A OR TBBPA				16	60	48	79	60	3
11	Dronabinol / THC	Dronabinol				61	470	134	2654	59	130
12	TPHP	Triphenyl phosphate OR triphenylphosphate				9	22	27	28	32	4
13	BDE-100 / PBDE	pentabrominated diphenyl ether 100 OR BDE-100 OR 5436-43-1 OR 2,2',4,4'-Tetr				97	240	350	351	234	13
14	Styrene	Styrene				1041	1942	102	533	79	247
15	PCB126	3,4,5,3',4'-pentachlorobiphenyl				22	80	58	53	73	6

Figure 12. Example of Landscape sheet use

To illustrate, we will double-click on the cell with the arrow pointer in Figure 13. When we double-click on this cell this tells the Abstract Sifter to take the query text in Column C about Linalool and append it to query text designed to find citations about reproductive toxicity. Figure 14 shows the constructed query. We can then click on *Submit* and the query gets sent to PubMed and we can then see the results on the Main sheet. The number of articles retrieved from PubMed is 5. That count is placed in the corresponding Landscape cell that we just clicked on.

	chromosome aberrations OR	carcinogen* OR precancerous	abnormal OR adverse effects))	chemically induced OR
Subject queries:				
Chemical / Entity query	Genetox	Cancer	ReproTox	NeuroTox
Tetrachloroethylene[majr]	42	1152	39	6
Tripropylene glycol OR 24800-44-0	4	7	0	0
Tetrachlorophthalic anhydride	1	0	0	0
Linalool	41	78	5	0
Tetrabromobisphenol A OR TBBPA	16	60	48	7
Dronabinol	61	470	134	265
Triphenyl phosphate OR triphenylphosphate	9	22	27	2

Figure 13. Double-click on article count cells

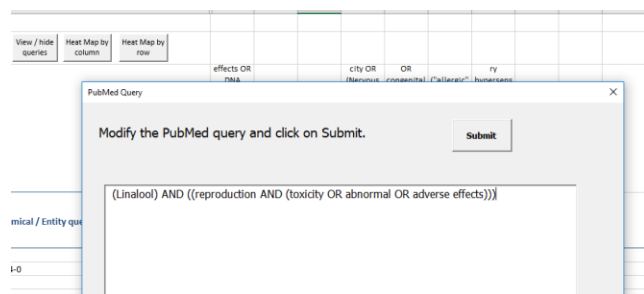


Figure 14. Constructed query

Now let's add to the Landscape sheet. Figure 15 shows how we added a new chemical to the list: aspirin. To find out the article counts for aspirin, select empty cells on the same row as aspirin, then click on *Update Article Counts* button. Excel will build each query from the aspirin part and the subject matter part and send each query to PubMed to find out how many citations satisfy the query. The article

counts are placed in the corresponding cells. To run the query and retrieve the results, just double-click on any of the article count cells.

Abstract Sifter	Landscape View									
v5.6		Update Article Counts	More stuff	Heat Map by column	Heat Map by row					
		Then click here				effects OR DNA Damage OR chromosome	s or cancer OR carcinogen* OR precancerous	ion AND (toxicity OR abnormal OR adverse	city OR (Nervous system diseases and chemical	OR congenital abnormalities OR Prenatal Exposure
(optional) DSSTOX link to Dashboard	Preferred Name	Chemical / Entity query				Genetox	Cancer	ReproTox	NeuroTox	DevTox
DTXSID1021322	Disulfiram	97-77-8 OR Disulfiram				169	569	38	739	26
DTXSID6024337	Thiobencarb	28249-77-6 OR Thiobencarb OR benthicarb				2	7	5	12	6
DTXSID3023556	Retinol	68-26-8 OR Retinol OR Vitamin A								
DTXSID2022880	Danazol	17230-88-5 OR Danazol								
DTXSID9020453	Dieldrin	60-57-1 OR Dieldrin								
DTXSID7032638	Pyraclostrobin	175013-18-0 OR Pyraclostrobin OR pyrachlostrobin				17	5	9	15	21
DTXSID8024151	Imazalil	35554-44-0 OR Imazalil OR enilconazole				24	28	12	11	11
	Linalool	Linalool				46	99	6	174	30
	Styrene	Styrene[majr]				206	496	60	200	56
	TPHP	Triphenylphosphate OR "triphenyl phosphate"				13	30	31	38	38
	PERC/TCE	Trichloroethylene[majr]				117	633	79	212	61
	Dronabinol/THC	Dronabinol				64	504	144	2772	64

Figure 15. Adding rows to the Landscape sheet

68-26-8 OR Retinol OR Vitamin A	1690	14925	1235	3160	1276
17230-88-5 OR Danazol	37	624	101	118	11
60-57-1 OR Dieldrin	95	328	108	254	78
175013-18-0 OR Pyraclostrobin OR pyrachlostrobin				15	21

Figure 16. After clicking on Update Article Counts

New subject matter queries can be entered as well. The query part goes into Row 3 and a heading (of your choice) goes into Row 5. See the example below where the PubMed query part: skin OR dermatitis is entered with the heading skin. Next highlight the cells underneath and click on the *Update Article Counts* button. The counts of articles satisfying the queries are placed in the cells. What's happening behind the scenes? For each cell, a query is being built by the Abstract Sifter and sent to PubMed to retrieve a record count. That record count is then inserted into the corresponding cell. (Figure 17.)

Keep in mind that our examples revolve around chemicals, but that does not mean one is limited to chemicals. The entries in Column C and in Row 3 can be whatever you the end-user want them to be: genes, proteins, diseases, authors ...

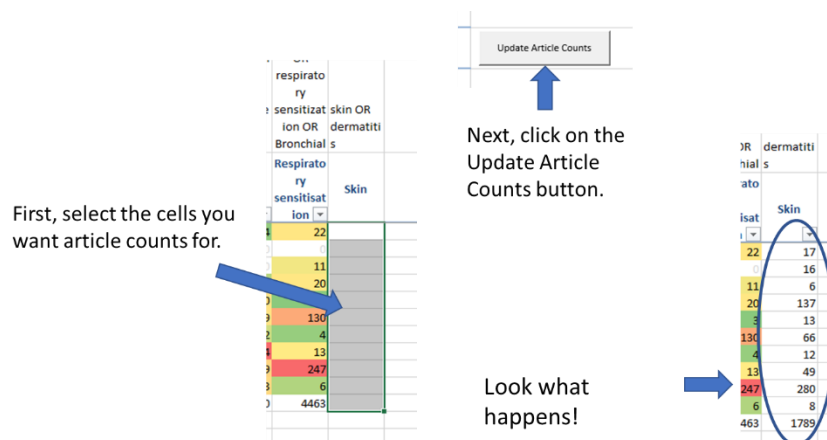


Figure 17. Steps for retrieving counts

Making things look good

The Landscape sheet has three buttons that make formatting easy (Figure 18). The heat map buttons will quickly apply heat map coloring to the cells with article counts either by column or by row. Try them out!

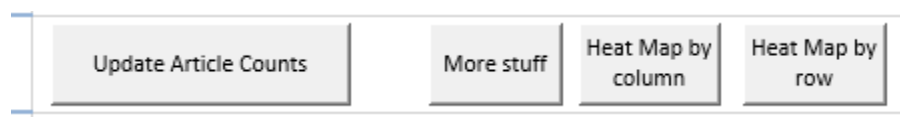


Figure 18. Buttons on the Landscape page include formatting actions.

Sample_Queries and Pathway_Queries Sheets

These two sheets function in a very similar way. We will use the Sample_queries sheet as an example in this user guide. Both sheets contain a number of sample subject matter queries that the end user can use as a starting point for building a Landscape view of a set of entities. Let's see how. First, we will clean off the old subject matter queries by deleting columns E-L on the Landscape sheet. (You can let the previous work stay if you wish.) Next, on the Sample_Queries sheet we will select rows with queries of interest then we click on the button *Send Queries to Landscape* (Figure 19).


Sample Queries		Note: these are starting points ... please expand and customize	Send queries to Landscape 
Category	Heading	Query (double-click to see how the query looks to PubMed)	
Methods	In vitro	In Vitro Techniques[mh] OR cell culture or "in vitro"	
Mixtures	Mixtures	(Drug synergism[mh] OR cocarcinogenesis OR pesticide synergists[mh] OR mixture[tiab] OR mixtures[tiab] OR Drug Antagonism[n	
Medicine	Clinical trials	((clinical[Title/Abstract] AND trial[Title/Abstract]) OR clinical trial[Publication Type])	
Medicine	Clinical trials in children	((children OR child OR infants) AND human) AND ((clinical[Title/Abstract] AND trial[Title/Abstract]) OR clinical trial[Publication Typ	
Medicine	Obesity	(obesity OR obese OR adipose OR overweight OR adipogenesis OR adipose tissue)	
Toxicity	Genetox	(dna/drug effects OR DNA Damage OR chromosome aberrations OR genotoxicity OR micronucleus OR DNA Repair OR mutagenicity	
Toxicity	Cancer	neoplasms or cancer OR carcinogen* OR precancerous	
Toxicity	ReproTox	(reproduction AND (toxicity OR abnormal OR adverse effects))	
Toxicity	NeuroTox	(neurotoxicity OR (Nervous system diseases and chemically induced) OR ((neurons OR brain OR behavior) AND drug effects)	
Toxicity	DevTox	((toxicity OR congenital abnormalities OR Prenatal Exposure Delayed Effects) AND (fetus OR embryo OR embryonic development C	
Toxicity	Skin sensitization	("allergic" AND "contact" AND dermatitis) OR Dermatitis, Allergic Contact[mh]	
Toxicity	Respiratory sensitisation	(Respiratory hypersensitivity OR respiratory sensitization OR Bronchial Hyperreactivity OR Respiration Disorders OR Respiratory Tr	
Toxicity	DNT	((Brain OR central nervous system OR "CNS" OR "neural tube" OR spinal cord OR spina bifida OR Nervous System Diseases or Neura	
Use	Pharmaceutical	"therapeutic use" OR "therapeutic use"[subheading] OR pharmacologic actions[mh] OR drug therapy	
Use	Pesticide	pesticide OR insecticide OR rodenticide OR fungicide	
Use	Cosmetics	cosmetics OR beauty	
Use	Explosive Agents	Explosive Agents OR explosive OR explosives	
Use	Food	food OR diet OR beverage OR nutrition OR eating	
Use	Surface-acting	Antifoaming OR Anti-foaming OR detergent OR detergents OR soap OR detergent OR surfactant	
Use	Dye/coloring	dye OR "coloring agent" OR pigment OR pigments	
Use	Fertilizer	fertilizer OR fertilize	
Use	Solvents	solvents OR solvent	

Figure 19. Selecting rows with queries of interest

Our Landscape sheet then looks like Figure 20.

Figure 23. TermMap sheet More button actions

The TermMap sheet is then populated with what might be a coral ontology. Please note – this is NOT a real ontology. It is made up to be an illustration of what you can do. The coral names may be real, but the color categories are completely made up. Next, click on the Map! Button. After a few seconds you will see in numbers appear in Column C. (Figure 24.) These are counts of the number of citations from Main that contain the term in Column B. The term *zoanthid* is in 2 articles, *Acropora millepora* in 45.

Term Expand / Map	Map!	More
Version 6.0		
Map to this:	When you see this:	Count
Coral	Anthozoa	923
Coral:red	Pocillopora damicornis	54
Coral:red	Acropora millepora	46
Coral:red	Stylophora pistillata	39
Coral:red	zoanthid	2
Coral:red	M. annularis	2
Coral:red	Acropora muricata	12
Coral:red	Porites lutea	8
Coral:red	Colpophyllia natans	2
Coral:red	Seriatopora hystrix	9
Coral:red	Anthropocene	23
Coral:red	brain coral	4
Coral:red	Orbicella annularis	3
Coral:red	A. muricata	4
Coral:red	Meandrina meandrites	1
Coral:red	Diploria labyrinthiformis	4
Coral:red	Pseudodiploria strigosa	10
Coral:red	Agaricia agaricites	1
Coral:red	Porites porites	1
Coral:blue	P. verrucosa	1
Coral:blue	Ctenactis echinata	1
Coral:blue	P. eydouxi	0
Coral:blue	Eusmilia fastigiata	1
Coral:blue	Isopora palifera	2
Coral:pink	Dichocoenia stokesi	1

Figure 24. TermMap sheet after Map! Action has counted occurrences of the terms.

The Abstract Sifter did more than just count the articles where it found the terms. The Sifter changed the abstract for each citation in which at least one of the terms was found. (Of course, the abstract is changed only in the Sifter, not at PubMed. Rerunning the query will refresh the abstracts back to their original state.)

Here's how the abstract is modified: if any of the column B terms was found in the title and abstract, then "TERMX:" was appended to the abstract. For each column B term found, "TX: " and the column A value plus the Column B value were stuck on the end of the abstract.

To see an example that will make this clearer ... see Figure 25 below of an abstract on the Abstract Sheet. At the end you see "TERMX: |TX:Coral:Anthozoa |TX:Coral:red:Seriatopora hystrix"

Title and Abstract:	<p>Species-specific impact of microplastics on coral physiology. ABSTRACT: There is evidence that microplastic (MP) pollution can negatively influence coral health; however, mechanisms are unknown and most studies have used MP exposure concentrations that are considerably higher than current environmental conditions. Furthermore, whether MP exposure influences coral susceptibility to other stressors such as ocean warming is unknown. Our objective was to determine the physiology response of corals exposed to MP concentrations that have been observed in-situ at ambient and elevated temperature that replicates ocean warming. Here, two sets of short-term experiments were conducted at ambient and elevated temperature, exposing the corals <i>Acroporasp.</i> and <i>Seriatopora hystrix</i> to microspheres and microfibrils. Throughout the experiments, gross photosynthesis and net respiration was quantified using a 4-chamber coral respirometer, and photosynthetic yields of photosystem II were measured using Pulse-Amplitude Modulated (PAM) fluorometry. Results indicate the effect of MP exposure is dependent on MP type, coral species, and temperature. MP fibres (but not spheres) reduced photosynthetic capability of <i>Acropora</i> sp., with a 41% decrease in photochemical efficiency at ambient temperature over 12 days. No additional stress response was observed at elevated temperature; photosynthetic performance significantly increased in <i>Seriatopora hystrix</i> exposed to MP spheres. These findings show that a disruption to coral photosynthetic ability can occur at MP concentrations that have been observed in the marine environment and that MP pollution impact on corals <u>remains an important aspect for further research.</u> Copyright © 2020 Elsevier Ltd. All rights reserved. KEYWORDS: MeSH Chemical: Microplastics Plastics MeSH: Animals Anthozoa/majr Coral Reefs Microplastics Photosynthesis Plastics Other:Microplastic Ocean warming Photosynthesis Reef-building corals Respiration Stress. TERMX: TX:Coral:Anthozoa TX:Coral:red:Seriatopora hystrix</p>
----------------------------	--

Figure 25. How term mapping changes the abstract. See the circled area.

Two of the coral column B terms were found and appended along with their Column A values Coral and Coral:red.

In the Abstract Sifter, if text exists in the abstract column that means it can be sifted on! There are three new ways to sift if you map terms.

1. On the Main sheet, in cell B3, C3, or D3 - Sift on *TERMX*: ... this will show you any citation that has a least one of the column B terms.
2. On the Main sheet, cell B3, C3, or D3 - Sift on *TX*: ... this will count the number of terms from column B found in the citation.
3. Sift on a value in column A or column B. To do this quickly, stay on the TermMap sheet and double-click on a term in either A or B and see what happens. (What does happen? The Sifter copies the term to the Main sheet cell B3, lets the Main sheet sift the results, and then sorts by B3. It happens fast, but it is very simple.)

Exporting to other applications from the Notes sheet

The Abstract Sifter allows the user to export articles from the Notes sheet to outside applications. On the Notes sheet there is a button labeled *Export*. By clicking on this button, the form in Figure 26 appears. The first set of radio buttons allows the user to select what data is exported and how the records should be formatted. Next the user can choose to export all entries / rows on the Notes sheet or just selected rows. If the end-user selects PMIDs to be exported, the PMIDs will be formatted in the box. In this case, clicking on Next Step will copy the formatted PMIDs to the clipboard, ready to be pasted to the next application. They should then be pasted into the destination. In the case of PubMed, they should be pasted into the query box in PubMed Entrez. (Figure 27) From PubMed, the citations can be downloaded in a variety of formats, including a format that can be imported into citation management software (Figures 28 and 29).

My Notes Double-click on row to curate

PMID	yes	no	maybe	Who	Tag
30387063	1	0	0	ncb	Fipronil rats / dose
29881965	1	0	0	ncb	Fipronil rats / dose
14643964	1	0	0	ncb	Fipronil rats / dose
32772290	1	0	0	ncb	Fipronil rats / dose
32651782	1	0	0	ncb	Fipronil rats / dose
25481984	1	0	0	ncb	Fipronil rats / dose
27371222	1	0	0	ncb	Fipronil rats / dose
31873888	1	0	0	ncb	Fipronil rats / dose
24978116	1	0	0	ncb	Fipronil rats / dose
26142839	1	0	0	ncb	Fipronil rats / dose
12442503	1	0	0	ncb	Fipronil - overview
27614034	0	0	1	ncb	
9860498	0	0	1	ncb	
22045597	0	0	1	ncb	

Notes export

More things to do with Notes ...

Exporting

Select export option:

- ☒ PMIDs delimited by OR (for PubMed)
- ☐ PMIDs delimited by commas (for HAWC)
- ☐ PMIDs delimited by lines (for Sysrev or HERO)
- ☐ RIS format
- ☐ To text format (txt) including all notes

Next Step -->

Figure 23. Form that appears after clicking on Export button

NCBI Resources How To

PubMed 16472551[uid] OR 10653531[uid] OR 30864424[uid] OR 26642910[uid] OR 22504667[uid] OR 16472551[uid] Search

US National Library of Medicine
National Institutes of Health

PubMed

PubMed comprises more than 29 million citations for biomedical literature from MEDLINE, life science journals

Figure 24. Paste PMIDs in the query box to retrieve the records.

NIH National Library of Medicine
National Center for Biotechnology Information

PubMed 15777654[uid] OR 11884519[uid] OR 9349525[uid] OR 30387063[uid] OR 14643964[uid] OR 32772290[uid] OR 32651782[uid] OR 27371222[uid] OR 31873888[uid] OR 24978116[uid] OR 26142839[uid] OR 12442503[uid] OR 27614034[uid] OR 9860498[uid] OR 22045597[uid] Search

Advanced Create alert Create RSS User Guide

Save Email Send to Sorted by: Most recent Display options

62 results

Clipboard
My Bibliography
Collections
Citation manager

RESULTS BY YEAR

1

Cite

Share

PMID: 32070689

injected into the substantia nigra of male rats decreases
tent: A neurochemical, immunohistochemical and

S C. Corda G. Cocco C. De Deunvaerdere P. Argiolas A. Melis MR. Sanna F.
20:384:112562. doi: 10.1016/j.bbr.2020.112562. Epub 2020 Feb 15.

Figure 24. In PubMed, click on Send to

Save Email Send to Sorted by: Most recent Display options

Create a file for external citation management software

Selection: All results on this page

Create file Cancel

Figure 25. Dialog box for exporting to citation manager

When the user clicks on the Create File button, a file is created and downloaded in nbib format and can be imported into most common reference manager software.

If the end-user specifies RIS format or text format, files will be created. The user will specify the location and name of the files. The text file option includes the abstract, tags, and notes.

Helpful Tips and Guidelines

Tip 1 – checking quality of results

The Landscape sheet is a great way to explore a set of chemicals, but some chemical names are long, complex, and a challenge to PubMed. If you copy and paste a chemical name from another source, make sure it does not have any special characters. Non printing escape characters make the web service calls give unexpected results, but the PubMed web site knows how to ignore them.

For other types of errors or strange results, it's a good idea to check it in PubMed. You can take any query generated by the Abstract Sifter and copy and paste it into PubMed using Ctl-C to copy and Ctl-V to paste. For example, the query in the box shown in Figure 29 is selected and copied (with Ctl-C). Then in PubMed the query is pasted into the query line at the top as shown in Figure 30. On the right side of the page is a box entitled *Search Details*. Click on the *See More ...* link to expand this box. Figure 31 shows the information provided by PubMed about how it expands the query. If you need to learn more about PubMed queries, click on *Help* on the PubMed home page.

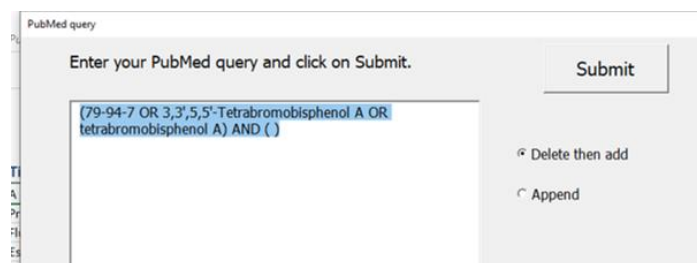


Figure 29. Select and Ctl-C to copy

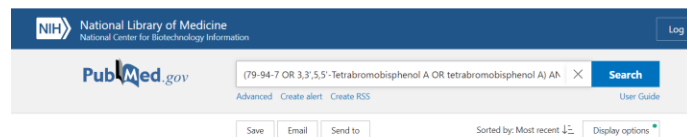


Figure 30. Ctl-V to paste in PubMed then search

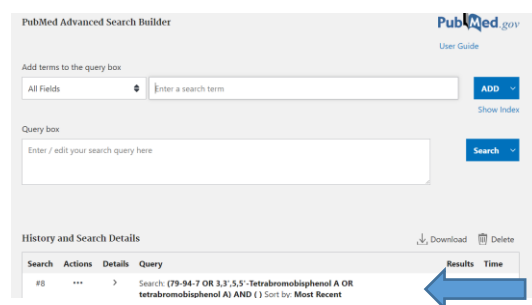


Figure 26. See what PubMed does to expand your search

History and Search Details					Download	Delete
Search	Actions	Details	Query	Results	Time	
#8	...	▼	Search: (79-94-7 OR 3,3',5,5'-Tetrabromobisphenol A OR tetrabromobisphenol A) AND () Sort by: Most Recent ("79-94-7"[All Fields] OR ("3"[All Fields] AND "3"[All Fields] AND "5"[All Fields] AND "5"[All Fields]) OR ("5 tetrabromobisphenol"[All Fields]) OR ("tetrabromobisphenol a"[Supplementary Concept] OR "tetrabromobisphenol a"[All Fields]) OR "tetrabromobisphenol a"[All Fields]) Translations tetrabromobisphenol A: "tetrabromobisphenol A"[Supplementary Concept] OR "tetrabromobisphenol A"[All Fields] OR "tetrabromobisphenol a"[All Fields]	935	18:41:47	

Figure 32. PubMed query breakdown and expansion

Note that after PubMed rolled out its new version in 2020, not just the looks of the site changed. They redid the search algorithms. As of this writing, the web service had not changed to use the new search methods – that means for the first time we are noticing small differences in the returned record counts.

Tip 2 – Sifting the chemical literature

It can be very helpful in chemical research to include the chemical name in the sifting process. This is because a chemical can be mentioned in an abstract even in cases where the article is not really about the chemical and will be retrieved in the PubMed query (depending on how the query is worded). Counting the occurrences of the chemical name in the abstract through the sifting process can help the user discriminate between articles mentioning a chemical or those that are actually about the chemical.

Tip 3 – cleanup and customization

The Abstract Sifter can be cleaned up by deleting rows and columns from previous work, but the Abstract Sifter programming requires certain columns and rows to be in certain places. To learn how to clean up your sifter without disrupting the behind-the-scenes coding, consult the table below.

Sheet name	Advice for cleaning
Main	Do not add columns. Rows will be added and deleted by the Sifter.
Abstract	Do not add or delete rows or columns. The Sifter software updates this sheet.
Notes	Delete any unwanted rows after Row 2. Do not add or delete columns.
Log	Delete any unwanted rows after Row 2. Do not delete columns. Add columns after G if desired.
Sample_Queries	Delete unwanted rows after Row 3. Modify and add rows as desired, following the pattern of current rows. (That is, keep the heading in column B and the query text in column C.) <i>Hint: use this sheet to keep queries important to your organization.</i>
Pathway_queries	Delete unwanted rows after Row 3. Modify and add rows as desired, following the pattern of current rows.
Landscape	Delete or modify rows after Row 4 and columns after Column D.

CuratedLists	Delete or modify rows after Row 3 and columns after Column C.
TermMap	Delete or modify rows after Row 3.

Keep in mind that the Abstract Sifter is an Excel file. You can rename it, mail it, and of course, if you want to keep your Log, Notes, and Landscape entries, you should save it. The Sample_queries sheet provides an opportunity for you and your organization to start collecting and organizing queries that you have found useful. As mentioned earlier, feel free to hide any sheets you don't use to keep your workplace streamlined.

Tip 4 – Collaborative literature review tips

Sometimes more than one person will want to work together on evaluating a set of articles. The Abstract Sifter has some features to make this easier. So, let's say Mary and Joe each retrieve, sift, and take notes on their own Abstract Sifter files. Mary can copy Joe's notes to her version of the Sifter and then she has both sets. (Or they can mail the Sifter back and forth ...)

The screenshot shows the 'Notes export' dialog box in the Abstract Sifter application. The dialog has a title bar 'Notes export' and a button '<--Back'. Below the title bar are two buttons: 'Highlight Noted PMIDs' and 'More stuff'. A note on the right says 'Note: Feel free to delete rows but not columns. Some stuff is disabled.' The main content area is titled 'More things to do with Notes ...' and contains a button 'Highlight conflicting' which is circled in red. Below this is a section 'Exporting' with the text 'Select export option:' and two radio buttons: 'PMIDs delimited by OR (for PubMed)' (selected) and 'PMIDs delimited by commas (for HAWC)'. To the right of these buttons is a list of PMIDs: '30387063[uid] OR 29881965[uid] OR 14643964[uid] OR 32772290[uid] OR 32651782[uid] OR 25481984[uid] OR 27371222[uid] OR 31873888[uid] OR'. The background shows a table of notes with columns for PMID, Yes/No/Maybe, Who, Tag, and Note. Some rows are highlighted in purple, indicating conflicts.

Figure 33. Notes from two reviewers combined on the Notes sheet.

To see if she and Joe disagreed on any record, she can click on More Stuff then Highlight Conflicting. The titles of Notes with different yes/no/maybe designations are colorized in purple. Resolving the conflicts and re-clicking on the button will cause the purple to disappear.

My Notes				Double-click on row to curate			<div><--Back</div>		<div>Highlight Noted PMIDs</div>		<div>More stuff</div>		Note but r be di
	yes	no	maybe										
PMID				Who	Tag	Note	PubYr	Title		Auth			
22045597	0	0	1	joe			2012	Adsorption, transport and degradation of fipronil termiticide in three Haw Shua		Shua			
22045597	1	0	0	mary	Helpful		2012	Adsorption, transport and degradation of fipronil termiticide in three Haw Shua		Shua			
26142839	0	1	0	mary			2015	Fipronil induces CYP isoforms in rats.		Caba			
26142839	1	0	0	mary	Helpful		2015	Fipronil induces CYP isoforms in rats.		Caba			
9860498	0	0	1	joe	Somewhat interesting		1998	Mechanisms for selective toxicity of fipronil insecticide and its sulfone me		Hain			
9860498	1	0	0	mary	Helpful		1998	Mechanisms for selective toxicity of fipronil insecticide and its sulfone me		Hain			
12442503	1	0	0	mary	Helpful		2003	Fipronil: environmental fate, ecotoxicology, and human health concerns.		Tingl			

Figure 34. Purple highlighting on title of conflicting notes.

Tip 5 – Connections to the EPA Chemicals Dashboard

The Environmental Protection Agency's Chemicals Dashboard is a great place to find chemical information to enhance your chemical search queries with synonyms and CAS numbers. Future releases of the Dashboard will offer opportunities to download a list of chemicals formatted for easy insertion into the Landscape sheet. You'll find the Chemistry Dashboard here:

<https://comptox.epa.gov/dashboard>.

The EPA Chemicals Dashboard also contains its own (slightly different) version of the Abstract Sifter. It works on the same basic premise as the Excel version, but has some interesting differences. To see it, start with a chemical search. Let's look at the chemical fipronil by entering the name in the search box and clicking on the search icon (magnifying glass) (Figure 35).

The screenshot shows the EPA Chemistry Dashboard interface. At the top, the EPA logo and navigation links (Home, Advanced Search, Batch Search, Lists, Predictions, Downloads) are visible. A circular seal of the United States Environmental Protection Agency is on the left. The main header displays '875 Thousand Chemicals'. Below this, there are tabs for 'Chemicals', 'Product/Use Categories', and 'Assay/Gene'. A search bar contains the text 'fipronil'. A dropdown list shows search results for 'fipronil' with chemical structures and DTXSID numbers: Fipronil (DTXSID4034609), Fipronil amide (DTXSID60873419), Fipronil sulfide (DTXSID5089644), Fipronil Sulfone (DTXSID6074750), Fipronil sulfone-13C4 15N2 (DTXSID10894093), and Fipronil- 13C4 15N2 (DTXSID50894092).

Figure 35. Searching for fipronil on the EPA's Chemistry Dashboard entry form

The main page for fipronil is displayed with the structure diagram and a selection of tabs below that lead to other information about the chemical. Click on the Literature tab as shown in Figure 33.

The screenshot shows the main page for Fipronil (DTXSID4034609) on the EPA Chemistry Dashboard. The header includes the EPA logo, navigation links, and a 'Copy' button. The main content area displays the chemical name 'Fipronil', its identifier '120068-37-3 | DTXSID4034609', and a note 'Searched by DSSTox Substance Id.'. Below this is an 'Abstract Sifter' section with a search bar and a 'Retrieve Articles' button. On the left, a sidebar contains various tabs: DETAILS, EXECUTIVE SUMMARY, PROPERTIES, ENV. FATE/TRANSPORT, HAZARD, ADME, EXPOSURE, BIOACTIVITY, SIMILAR COMPOUNDS, GENRA (BETA), RELATED SUBSTANCES, SYNONYMS, LITERATURE (selected), PUBMED ABSTRACT SIFTER (highlighted with a blue arrow), PUBCHEM ARTICLES, PUBCHEM PATENTS, PPRTV, IRIS, and LINKS.

Figure 36. Select the Literature tab then on PubMed Abstract Sifter (see below).

Figure 37. How to select prepared queries.

Select PubMed Abstract Sifter on the left set of buttons. The Dashboard helps you to build queries for this chemical. The chemical identifier part of the query is prepopulated on the right with name and CAS number. The subject matter part of the query is determined by selecting a topic area in the pull-down box in the center of the form. The user has several pre-composed queries to choose from. When one of them is chosen, the query is modified by appending the subject matter text. Figure 37 shows that when Metabolism/PK/PD is chosen, the text (metabolism OR metabolite OR tissue distribution OR pharmacokinetics OR pharmacodynamics) is appended to the chemical identifiers. The query can be modified manually as well. When ready, the user clicks on Retrieve Articles.

Notice, too, that the blue button above lets the user download the Excel version of the Abstract Sifter.

This button will always download the most up-to-date version. Check back periodically with the EPA's Chemicals Dashboard to learn about enhancements to PubMed Abstract Sifter.

Populating the Excel Abstract Sifter from the EPA CompTox Chemicals Dashboard

The Chemicals Dashboard can download chemicals in a variety of formats. One of those formats make it easy to use in the Excel Abstract Sifter. Here's an example to get you started. On the home page of the Dashboard, click on Lists, then chemical (Figure 40.)

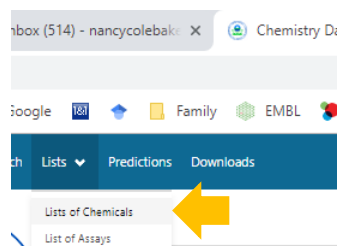


Figure 40. Download a list of chemicals.

Pick a list. We'll pick Algal Toxins as a sample. Click on the name, then, when the chemicals appear, click on Send to Batch Search. (Figure 41.)

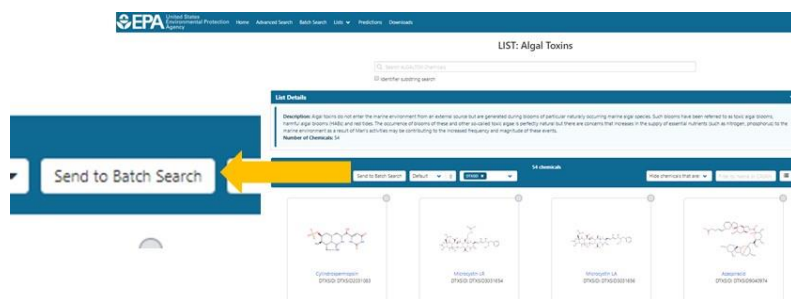


Figure 41. Send a list of chemicals to Batch Search.

The batch search page looks like Figure 41.

Advanced Search Batch Search Lists Predictions Downloads

Batch Search

Step 1 Step 2 Step 3 Step 4 Step 5

Step Three: Select Download Data or Display Chemicals

Please enter one identifier per line

Select Input Type(s)

- ☒ Identifiers
 - ☐ Chemical Name
 - ☐ CASRN
 - ☐ InChIKey
 - ☒ DSSTox Substance ID
 - ☐ DSSTox Compound ID
 - ☐ InChIKey Skeleton
 - ☐ MS-Ready Formula(e)
 - ☐ Exact Formula(e)
 - ☐ Monoisotopic Mass

Display All Chemicals Download Chemical Data

Enter Identifiers to Search (searches should be limited to <5000 identifiers)

DTXSID2031083
DTXSID3031654
DTXSID3031656
DTXSID9040974
DTXSID3074313
DTXSID60166611
DTXSID70207660
DTXSID60214520
DTXSID20274180
DTXSID90423027

Enhanced Data Sheets

- ☐ MetFrag Input File (Beta)
- ☐ ToxPrint single fingerprints
- ☐ Abstract Sifter Input File (Beta)
- ☐ Synonyms and Identifiers
- ☐ Related Substance relationships

Figure 42. Send a list of chemicals to Batch Search.

Click on the following: Download Chemical Data, then Download as Excel, then Abstract Sifter Input File (Beta), then (finally) the Download bar. This action will download the chemicals to Excel. Open that file. It will have 2 sheets. Open the one that is called Abstract Sifter. It looks like Figure 43. On the Abstract Sifter Landscape sheet, unhide column A. This is done by clicking on the left border of Column B, then right-clicking to see the menu where you can click on *Unhide*. Paste rows from the downloaded spreadsheet onto the Landscape sheet as in Figure 45.

	A	B	C
1	DSSTOX LINK	PREFERRED NAME	CHEMICAL/ENTITY QUERY
2	DTXSID2031083	Cylindrospermopsin	143545-90-8 OR Cylindrospermopsin
3	DTXSID3031654	Microcystin LR	101043-37-2 OR Microcystin LR OR cyanoginosin LR
4	DTXSID3031656	Microcystin LA	96180-79-9 OR Microcystin LA OR cyanoginosin-LA
5	DTXSID9040974	Azaspiracid	214899-21-5 OR Azaspiracid
6	DTXSID3074313	Saxitoxin	35523-89-8 OR Saxitoxin
7	DTXSID60166611	beta-N-Methylamino-L-alanine	15920-93-1 OR beta-N-Methylamino-L-alanine
8	DTXSID70207660	Decarbamylsaxitoxin	58911-04-9 OR Decarbamylsaxitoxin
9	DTXSID60214520	Gonyautoxin V	64296-25-9 OR Gonyautoxin V
10	DTXSID20274180	L-Domoic acid	14277-97-5 OR L-Domoic acid OR domoic acid
11	DTXSID90423027	palytoxin	77734-91-9 OR palytoxin
12	DTXSID50867064	Anatoxin a	64285-06-9 OR Anatoxin a OR anatoxin I
13	DTXSID60879996	Brevetoxin A	98112-41-5 OR Brevetoxin A
14	DTXSID20879997	Brevetoxin 2	79580-28-2 OR Brevetoxin 2
15	DTXSID40879999	Brevetoxin C	98225-48-0 OR Brevetoxin C
16	DTXSID40880000	Ciguatoxin 1	11050-21-8 OR Ciguatoxin 1
17	DTXSID00880001	Dinophysistoxin 1	81720-10-7 OR Dinophysistoxin 1
18	DTXSID60880002	Okadaic acid	78111-17-8 OR Okadaic acid
19	DTXSID10880012	Maitotoxin	59392-53-9 OR Maitotoxin
20	DTXSID90880015	Lyngbyatoxin-a	70497-14-2 OR Lyngbyatoxin-a
21	DTXSID10880017	Euglenophycin	1219817-69-2 OR Euglenophycin
22	DTXSID60880022	Nodularin	118399-22-7 OR Nodularin
23	DTXSID20880023	Yessotoxin	112514-54-2 OR Yessotoxin
24	DTXSID80880024	Azaspiracid 4	344422-49-7 OR Azaspiracid 4
25	DTXSID60880082	Aplysiatoxin	52659-57-1 OR Aplysiatoxin

Figure 43. Excel view of downloaded chemicals on Abstract Sifter sheet.

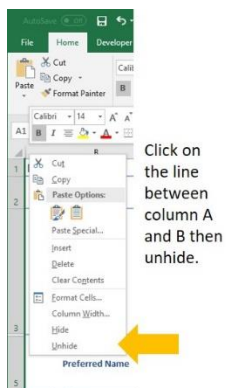


Figure 44. Unhide column A on the Landscape sheet in order to paste the DSSTox number there.

A		B	C	E	F	G
1	Abstract Sifter	Landscape View				
2			Update Article Counts	View / hide queries	Heat Map by column	Heat Map by row
3				(dna/drug effects OR DNA Damage OR chromosome aberrations OR	neoplasms OR cancer	(reproduction AND (toxicity OR abnormal OR adverse effects))
4			Subject queries:			
5	DSSTox link to Dashboard	Preferred Name	Chemical / Entity query	Genetox	Cancer	ReproTox
6	DTXSID2031083	Cylindrospermopsin	143545-90-8 OR Cylindrospermopsin			
7	DTXSID3031654	Microcystin LR	101043-37-2 OR Microcystin LR OR cyanoginosin LR			
8	DTXSID3031656	Microcystin LA	96180-79-9 OR Microcystin LA OR cyanoginosin-LA			
9	DTXSID9040974	Azaspiracid	214899-21-5 OR Azaspiracid			
10	DTXSID3074313	Saxitoxin	35523-89-8 OR Saxitoxin			
11	DTXSID60166611	beta-N-Methylamino-L-alanine	15920-93-1 OR beta-N-Methylamino-L-alanine			
12	DTXSID70207660	Decarbamylsaxitoxin	58911-04-9 OR Decarbamylsaxitoxin			
13	DTXSID60214520	Gonyautoxin V	64296-25-9 OR Gonyautoxin V			
14	DTXSID20274180	L-Domoic acid	14277-97-5 OR L-Domoic acid OR domoic acid			
15	DTXSID90423027	palytoxin	77734-91-9 OR palytoxin			
16	DTXSID50867064	Anatoxin a	64285-06-9 OR Anatoxin a OR anatoxin I			
17	DTXSID60879996	Brevetoxin A	98112-41-5 OR Brevetoxin A			
18	DTXSID20879997	Brevetoxin 2	79580-28-2 OR Brevetoxin 2			
19	DTXSID40879999	Brevetoxin C	98225-48-0 OR Brevetoxin C			
20	DTXSID40880000	Ciguatoxin 1	11050-21-8 OR Ciguatoxin 1			

Figure 45. This is what the sheet will look like after un hiding Column A and pasting the chemicals downloaded from the Dashboard.

Now, enter subject matter queries, or, if you already have queries in place, select the intersecting cells and click on *Update Article Counts*. Click on one of the Heat Map buttons to make it pretty.

A		B		C		E	F	G
1	Abstract Sifter	Landscape View						
2				Update Article Counts	View / hide queries	Heat Map by column	Heat Map by row	
3								
4								
5	DSSTOX link to Dashboard	Preferred Name	Chemical / Entity query			Genetox	Cancer	ReproTox
6	DTXSID2031083	Cylindrospermopsin	143545-90-8 OR Cylindrospermopsin			48	15	8
7	DTXSID3031654	Microcystin LR	101043-37-2 OR Microcystin LR OR cyanoginosin LR			89	129	74
8	DTXSID3031656	Microcystin LA	96180-79-9 OR Microcystin LA OR cyanoginosin-LA			1	1	0
9	DTXSID9040974	Azaspilicid	214899-21-5 OR Azaspilicid			2	12	1
10	DTXSID3074313	Saxitoxin	35523-89-8 OR Saxitoxin			20	51	5
11	DTXSID60166611	beta-N-Methylamino-L-alanine	15920-93-1 OR beta-N-Methylamino-L-alanine			13	13	10
12	DTXSID70207660	Decarbamylsaxitoxin	58911-04-9 OR Decarbamylsaxitoxin			0	0	0
13	DTXSID60214520	Gonyautoxin V	64296-25-9 OR Gonyautoxin V			0	0	0
14	DTXSID20274180	L-Domoic acid	14277-97-5 OR L-Domoic acid OR domoic acid			78154	279707	12022
15	DTXSID90423027	palytoxin	77734-91-9 OR palytoxin			6	30	2
16	DTXSID50867064	Anatoxin a	64285-06-9 OR Anatoxin a OR anatoxin I			6	4	6
17	DTXSID60879996	Brevetoxin A	98112-41-5 OR Brevetoxin A			1	2	0
18	DTXSID20879997	Brevetoxin 2	79580-28-2 OR Brevetoxin 2			4	3	1
19	DTXSID40879999	Brevetoxin C	98225-48-0 OR Brevetoxin C			6	14	4
20	DTXSID40880000	Ciguatoxin 1	11050-21-8 OR Ciguatoxin 1			2	30	2

Figure 46. Downloaded chemicals and queries with subject matter queries.

Now you have an overview of your chemicals and what literature is out in PubMed for them. Take advantage of the iterative nature of the Abstract Sifter to query, sift, read, note as much as you need.

Contact:

Contact Nancy Baker at baker.nancy@epa.gov with issues, ideas, and feedback.