

Web of Science Search Training - Boolean Operators

Everyone in your group is about to become an “expert” in a particular search strategy for finding resources through Web of Science. Once you have spent time in this group learning your search strategy, you will be re-grouped with other students. You will teach your search strategy to them and each of your new groupmates will teach you the strategy they just learned.

Your group’s search strategy is: Boolean Operators

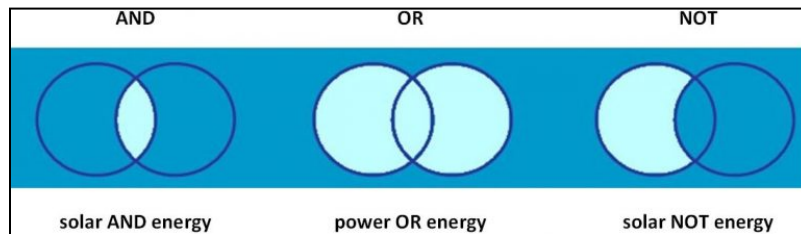
Your example topic is: Mercury in the food web

What are Boolean Operators?

Boolean operators are logic terms that can help you more precisely control your search results.

They are AND, OR, and NOT. If we’re starting with a keyword of “mercury” as a baseline search:

- Mercury AND “food web” will bring up results that have both of the terms mercury and “food web” in the articles’ database entries (e.g., their title or abstract).
- Mercury OR Lead would bring up any results that have *either* the term mercury or lead in the database entry.
- Mercury NOT Lead would bring up any results that have the term mercury in it but *do not* contain the word lead in the database entry.
- In the image below, the light blue highlighted areas show the types of results each Boolean operator would bring up.



(<https://ecampusontario.pressbooks.pub/literaturereviewsedunursing/chapter/chapter-4-evaluating-sources/>)

Now You Try!

1. Navigate to Web of Science. Perform a search in the Libraries catalog for “Web of Science”. The first result that comes up should be a link to the Web of Science database.
2. Type a single keyword in for our baseline search. In our example, type “**Mercury**.”

The screenshot shows the Web of Science search interface. At the top, there are tabs for 'DOCUMENTS' and 'RESEARCHERS'. Below the tabs, it says 'Search in: Web of Science Core Collection' and 'Editions: All'. There are two sub-tabs: 'DOCUMENTS' and 'CITED REFERENCES'. Below these, there is a search box with a dropdown menu set to 'All Fields'. To the right of the search box, there is a text input field containing 'mercury' and a clear button (X). Below the search box, there are buttons for '+ Add row', '+ Add date range', and 'Advanced search'. At the bottom right, there are buttons for 'x Clear' and 'Search'.

- a. How many results did you get?

3. Now, let's add **"AND food web"** to the search. Click on the search field to expand the search box and conduct an advanced search. The first line should include an "All Fields" search for "Mercury" and the second line should start with "And" (the Boolean term we are investigating). Change the field category to "All Fields", then type "food web" into the field, and click search.

The screenshot shows the Web of Science search interface. At the top, there is a search bar with the text "mercury (All Fields)" and a "Search" button. Below this, there is a section for building a search query. It contains two rows of search criteria. The first row has a dropdown menu set to "All Fields" and a text input field containing "mercury". The second row has a dropdown menu set to "And", a dropdown menu set to "All Fields", and a text input field containing "food web". Below these rows are buttons for "+ Add row", "+ Add date range", and "Advanced search". At the bottom right, there are buttons for "x Clear" and "Search".

- a. How many results do you have now? Is it more or fewer than your first search?
- b. Scan through the titles and abstracts - how has the content of the results changed?
4. Next we will take a look at the "NOT" operator. Say for whatever reason we're really not interested in any results about mercury in Arctic environments. Click in the search box to expand the search again. A third line auto-populates. Change the Boolean field to "NOT," the fields field to "All Fields," and type "Arctic" into the box. Click Search.

The screenshot shows the Web of Science search interface with three rows of search criteria. The first row has a dropdown menu set to "All Fields" and a text input field containing "mercury". The second row has a dropdown menu set to "And", a dropdown menu set to "All Fields", and a text input field containing "food webs". The third row has a dropdown menu set to "Not", a dropdown menu set to "All Fields", and a text input field containing "arctic". Below these rows are buttons for "+ Add row", "+ Add date range", and "Advanced search". At the bottom right, there are buttons for "x Clear" and "Search".

- a. Now how many results do you have?
5. Finally, "OR" will give us results that include either one term or another. Go ahead and navigate back to the home page for Web of Science (you can just click the Web of Science logo in the top left corner). Start a fresh new search. Enter "mercury" in the search box for "all fields." Then select the "add row" button and select "Or" for the Boolean, "all fields" for the field area, and type in "lead" in the search box. Click search.

The screenshot shows the 'DOCUMENTS' tab of the Web of Science search interface. At the top, it says 'Search in: Web of Science Core Collection' and 'Editions: All'. Below this, there are two tabs: 'DOCUMENTS' (selected) and 'CITED REFERENCES'. The search area contains two input fields. The first field has a dropdown menu set to 'All Fields' and contains the text 'mercury'. The second field has a dropdown menu set to 'All Fields' and contains the text 'lead'. Between the two fields is a radio button labeled 'Or'. At the bottom of the search area, there are three buttons: '+ Add row', '+ Add date range', and 'Advanced search'. At the bottom right, there are two buttons: 'x Clear' and 'Search'.

- a. Compared to how many results you got in step 2a, how many results do you have now?
6. You can string Boolean phrases together to create targeted searches too. For example, say we want resources about mercury in food webs in aquatic or “pelagic” (relating to the sea) ecosystems but are not interested in terrestrial ecosystems. Your search might look something like this:

The screenshot shows the 'DOCUMENTS' tab of the Web of Science search interface. The search area contains four input fields. The first field has a dropdown menu set to 'All Fields' and contains the text 'mercury'. The second field has a dropdown menu set to 'All Fields' and contains the text 'food webs'. The third field has a dropdown menu set to 'All Fields' and contains the text 'aquatic or pelagic'. The fourth field has a dropdown menu set to 'All Fields' and contains the text 'terrestrial'. Between the first and second fields is a radio button labeled 'And'. Between the second and third fields is a radio button labeled 'And'. Between the third and fourth fields is a radio button labeled 'Not'. At the bottom of the search area, there are three buttons: '+ Add row', '+ Add date range', and 'Advanced search'. At the bottom right, there are two buttons: 'x Clear' and 'Search'.

- a. Note how I put a Boolean phrase (“or”) within the search box for one of our advanced search lines. If you need to nest operators (think PEMDAS in math), put them within the individual lines.
- b. You have to nest Boolean phrases within these advanced search lines to precisely control your search. The example above will give us results with “mercury” and “food webs” in the database entries along with *either* “aquatic” or “pelagic” somewhere in the database entries. Results will *not* include any resources with “terrestrial” in the database entry.
- c. If we changed our search structure and put “or pelagic” on a separate line by itself, the search results drastically increase because the database reads the instructions as including results with mercury, food webs, and aquatic in the entry somewhere...*or* any results with *just* pelagic in its entry information.

Web of Science Search Training - Filtering Results

Everyone in your group is about to become an “expert” in a particular search strategy for finding resources through Web of Science. Once you have spent time in this group learning your search strategy, you will be re-grouped with other students. You will teach your search strategy to them and each of your new groupmates will teach you the strategy they just learned.

Your group’s strategy is: Filtering Results

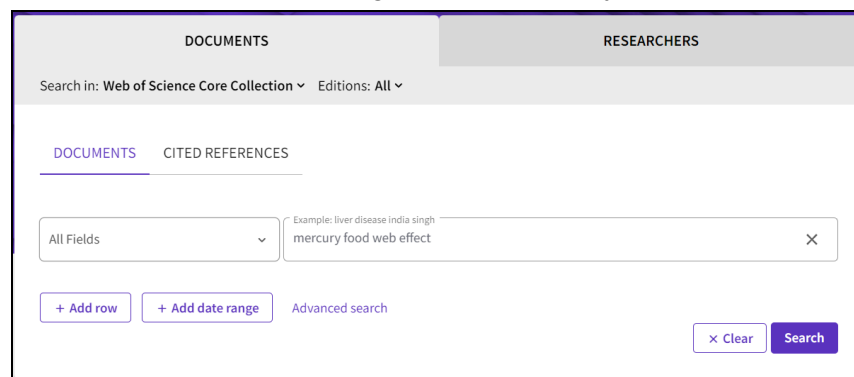
Your example topic is: Mercury in the food web

Why Filter?

Filtering helps us refine search results into a list of resources more relevant to our purposes.

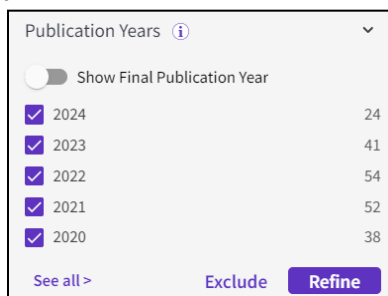
Now You Try!

1. To learn how to filter results, we’ll need to start with a search. Navigate to Web of Science by searching the Dartmouth Libraries catalog for “Web of Science”. Select **Web of Science**, which will be the top result and categorized as a *Database*.
2. Enter “mercury food web effect” in the search bar and click **Search**. This will deliver over 600 results. Take a quick look through the initial titles you see.



The screenshot shows the Web of Science search interface. At the top, there are tabs for 'DOCUMENTS' and 'RESEARCHERS'. Below the tabs, there is a search bar with the text 'Search in: Web of Science Core Collection' and 'Editions: All'. The search bar is divided into two sections: 'DOCUMENTS' and 'CITED REFERENCES'. The search bar contains the text 'mercury food web effect' and a 'Search' button. Below the search bar, there are buttons for '+ Add row', '+ Add date range', and 'Advanced search'. There are also buttons for 'x Clear' and 'Search'.

3. Browse the left-hand sidebar for options you can select to filter these results.
4. Let’s first reduce our results to those published in the last five years. Select the last five years under *Publication Years* and then click **Refine**. How many results are there now?



The screenshot shows the Web of Science filter sidebar. The 'Publication Years' section is expanded, showing a table of years and result counts. The table has two columns: 'Year' and 'Count'. The years listed are 2024, 2023, 2022, 2021, and 2020. The counts are 24, 41, 54, 52, and 38 respectively. There is a 'See all >' link and buttons for 'Exclude' and 'Refine'.

Year	Count
2024	24
2023	41
2022	54
2021	52
2020	38

5. Now let’s limit the results to articles. Select “article” under *Document Types* and click **Refine**. How many results are there now?

Document Types

☒ Article	180
☐ Review Article	27
☐ Early Access	6
☐ Editorial Material	1
☐ Proceeding Paper	1

Exclude Refine

6. Let's say we want to eliminate results within a discipline that's outside the scope of our topic. Under *Research Areas* select "Engineering" and then click **Exclude**. What do you notice about these subjects? Are they broad or narrow?

Research Areas

☐ Environmental Sciences Ecology	165
☐ Toxicology	32
☒ Engineering	22
☐ Marine Freshwater Biology	22
☐ Public Environmental Occupational Health	19

See all > Exclude Refine

7. Now backtrack. Perhaps we want to include Review articles in our results after all. Toward the top of the page, under "Refined by" click **X** next to *Document Types: Article*.

Refined By: Publication Years: 2024 or 2023 or 2022 or 2021 or 2020 X Document Types: Article X NOT Research Areas: Engineering X Clear all

8. Let's proceed to refine these results one level further. Under *Citation Topics Meso* click "Contamination & Phytoremediation" and then click **Refine**. These categories are narrower than the *Research Areas* above, but broader than the "Citation Topics Micro" that we'll get to next.

Citation Topics Meso

☒ 3.91 Contamination & Phytoremediation	124
☐ 3.60 Herbicides, Pesticides & Ground Pois...	26
☐ 8.93 Archaeology	11
☐ 3.2 Marine Biology	6
☐ 3.35 Zoology & Animal Ecology	4

See all > Exclude Refine

9. Under *Citation Topics Micro* click "Mercury" and then **Refine**.

Citation Topics Micro

☒ 3.91.644 Mercury	109
☐ 3.91.496 Cadmium	7
☐ 3.91.1064 Sediments	4
☐ 3.91.660 Arsenic	3
☐ 3.91.920 Selenium	1

Exclude Refine

10. We've now gone from over 600 results to less than just over 100. How different are these papers from the list you saw at the beginning? How have these filters helped you narrow down the topic? How might you narrow it further? If you have time, reset the filters and play around with different options.

Web of Science Search Training - Sorting and Citation Chaining

Everyone in your group is about to become an “expert” in a particular search strategy for finding resources through Web of Science. Once you have spent time in this group learning your search strategy, you will be re-grouped with other students. You will teach your search strategy to them and each of your new groupmates will teach you the strategy they just learned.

Your group’s strategy is: Sorting and Citation Chaining

Your example topic is: Mercury in the food web

What is Sorting?

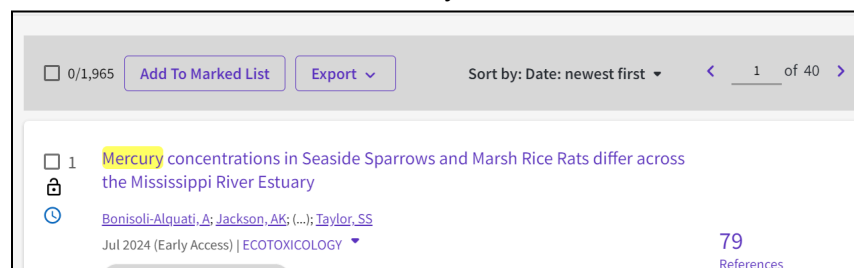
Sorting allows you to order your results by some facet you decide on. For example, you could sort results by date so that you’re seeing the most recently published papers first. Most databases also have an option to sort by “relevance”, which in Web of Science’s case prioritizes words or terms found in Title, Abstract, and Keywords categories within the database entries.

What is Citation Chaining?

Web of Science has two features called “references” and “citations” where it will tell you how many sources a given resource is citing (references) and will tell you how many other papers have cited the resource in question (citations). You can click on either of these numbers in a Web of Science entry to see a list of all the papers either referenced by your source or papers that have cited your source.

Now You Try!

1. Navigate to Web of Science. Use the Libraries catalog search bar to search for “Web of Science.” The Web of Science database should be the first result to appear.
2. Plug in a basic search - in this example type in “mercury and food webs”.
3. First, let’s investigate the “Sort by” feature. At the top of your results list, toward the right of the screen, is a dropdown menu called “Sort by.” There are several options to choose from when deciding how to sort your results. We are going to focus on two.
4. Select “Date: newest first” from the sort by list



- a. Take a look at your list of results. What do you notice about the publication date underneath the title and author information?

5. Another useful sorting option is "Citations." Selecting "Citations: highest first" will first show you results for items that have the most citations (that is, the highest number of other resources that have cited that particular source). Go ahead and sort your results by "Citations: highest first."
6. Pick a resource, any resource, and click on the citations hyperlink to the right of the item listing. The results that appear show you the list of resources that have cited the source you selected.
 - a. How might looking at/looking for resources that have cited a particular paper or article help you in finding your own relevant resources?
7. Click the back button. For that same resource you chose, now select the references hyperlink. Similarly, this page of results now shows you a list of sources cited by the paper you've selected.
 - a. How might looking at what papers a given source has cited help you in your research process?
8. Generally speaking, sources with high levels of citations are likely to be a significant part of an ongoing scholarly conversation on the topic. The more that other peer-reviewed papers have cited or built upon information from a given source, the more relevant in the field you might presume it to be. However, there are a few caveats to this rule of thumb that are important to consider:
 - a. A resource published two months ago has 0 citations listed in Web of Science so far. Another resource published twenty years ago has 13 citations. What effect might the date of publication have on how relevant the citation count is for your chosen resource?
 - b. Another factor to keep in mind is that different fields of study often see different rates of citation. For example, medical research tends to be cited more frequently than sociology research. How might that impact how you assess your search results?