Materials

- Step 01
- Step 02

Announcements

- Genome Science Camp
- College credit interest meeting after school today
  - Presentation on SUNY Albany's UHS Program
  - Intro to SUNY Albany's UHS website and resources
  - Informational Q&A – BRING YOUR QUESTIONS
  - Help with STEPS and finding PRJAs

CW - HW

- Use the skills you learned today to find a journal article that best fits your topic of interest.
- It must be printed out and you must have it with you for the future classes.
- If you already have one then look for a second one using the references of the first one.

How do I search for a peer reviewed journal article?

Mr. M. Gonzalez

Objectives

- I can efficiently use internet search engines for my literature review.
- I can use various on-line databases to find journal articles related to my topic of interest.

What's Your Topic?

- In your Step 01s you chose a topic of interest
- You then listed key words in Step 01

THE URBAN ASSEMBLY New York HARBOR SCHOOL

Step 01. Choosing a Research Topic

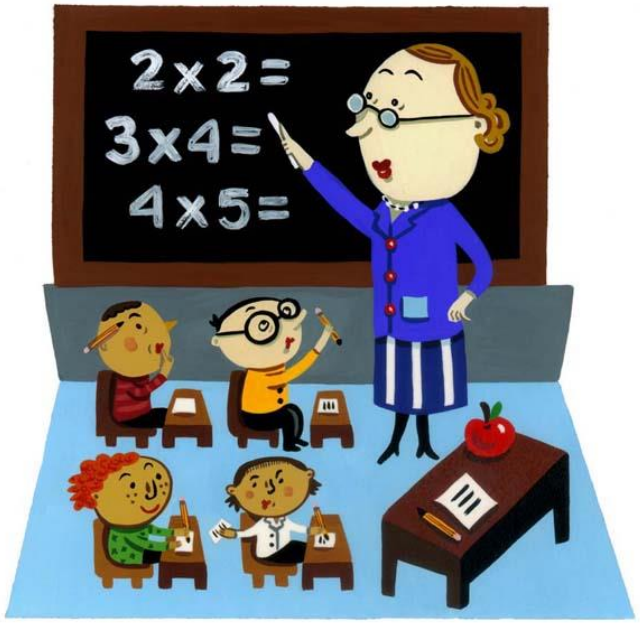
Mr. M. Gonzalez

Student's name: _____ Date: _____ Grade: _____

Directions. Which area(s) would you like to research? (Check off your top 3 choices) If you choose a topic that is not on the sheet below you must be able to defend it when we meet. Answer the questions on the other side of this sheet completely. The more complete your responses the faster your approval will be.

What's Your Topic?

- *For this class I will choose the following Scientific Problem:*
  - What are the levels of CO_2 in a NYC public school classroom?



Check Step 01 Key Words

I. Explain your research area of interest and why you want to pursue it?

_____

_____

_____

_____

II. Make lists of key words by topic and read more about them by using a search engine (*i.e.* google).

	CO2 Sources	
Indoor	Outdoor	Natural
Levels	Danger	symptoms
	Classroom	

III. After reading about your most interesting topic write down specific questions that come to your mind.

1._____

_____

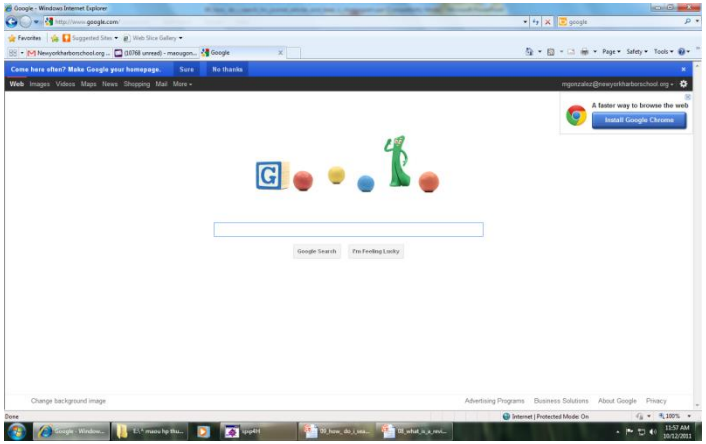
2._____

_____

- Key word box on the back of Step 01.
- These words are vital for next step.

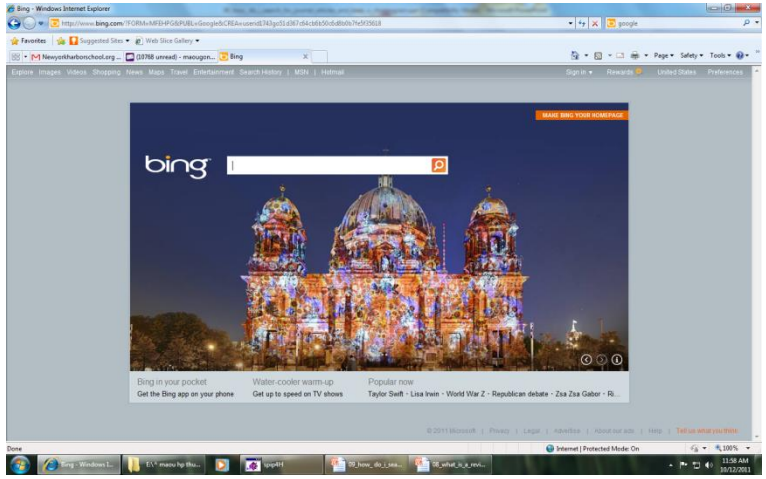
How do I search for a journal article?

Pick a Search Engine



- Google

- Bing



How do I search for a journal article?

Mix and Match Key Words From Step 01

How do I search for a jo

Keep Track of Your Queries in STEP 2

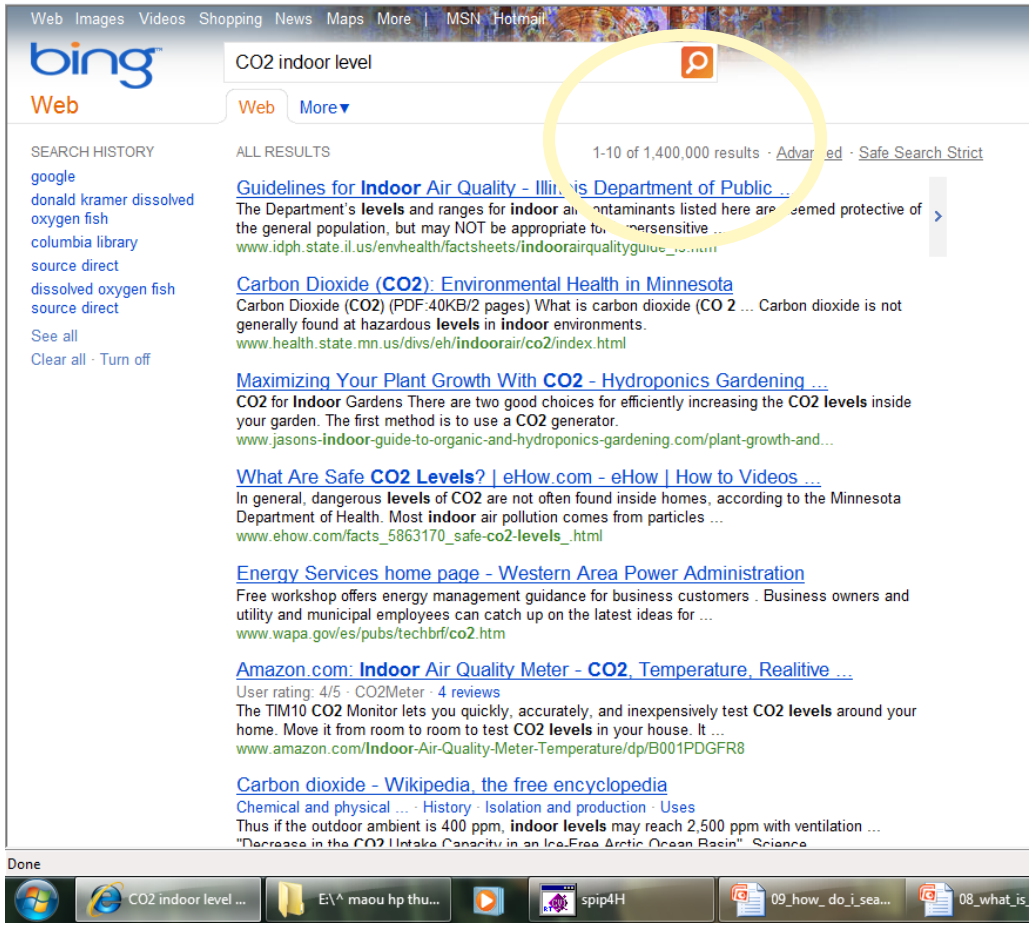
Name: _____ Grade: ___ Date: _____

V. Internet Search Queries: Complete one row for each search.

Search Engine Used:		Search Query:
Google	Bing	
	X	CO2 Indoor Level

How do I search for a journal article?

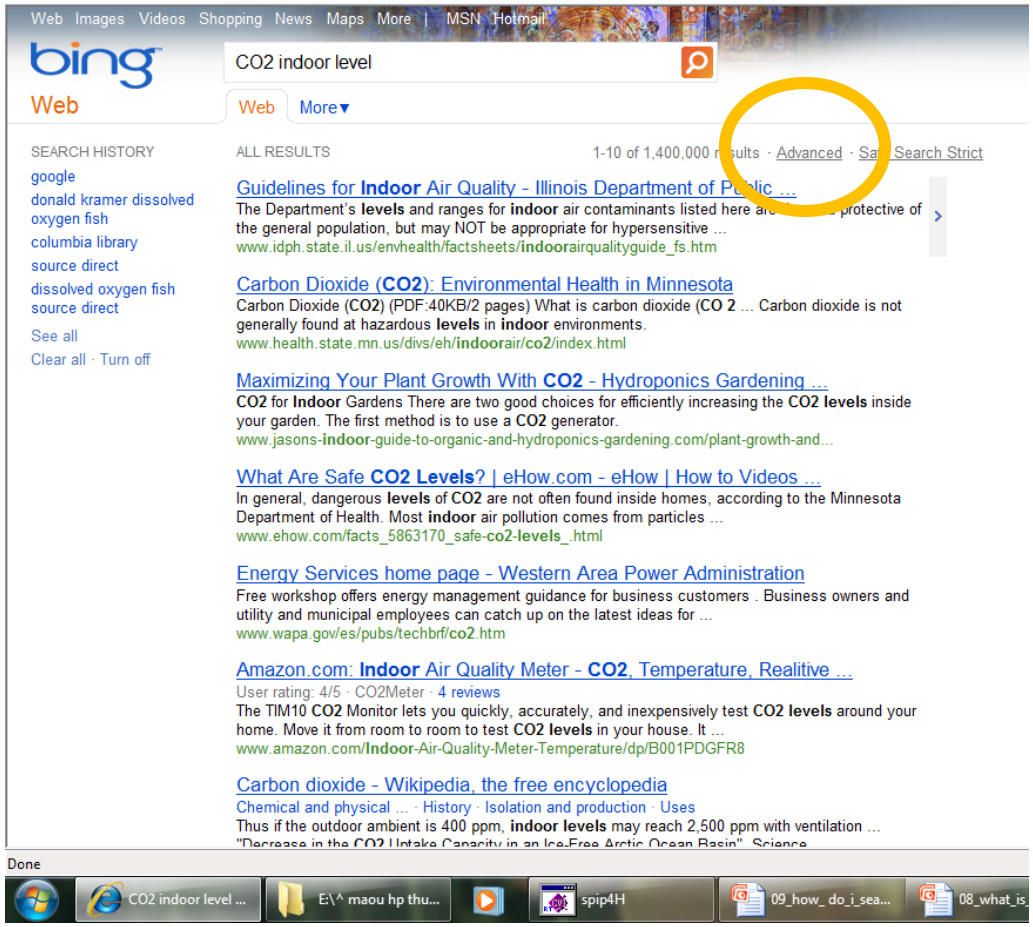
I got 1,400,000 results!



- How do you know you got good sites?
- What are good sites?
- How can you narrow your search for better results?

How do I search for a journal article?

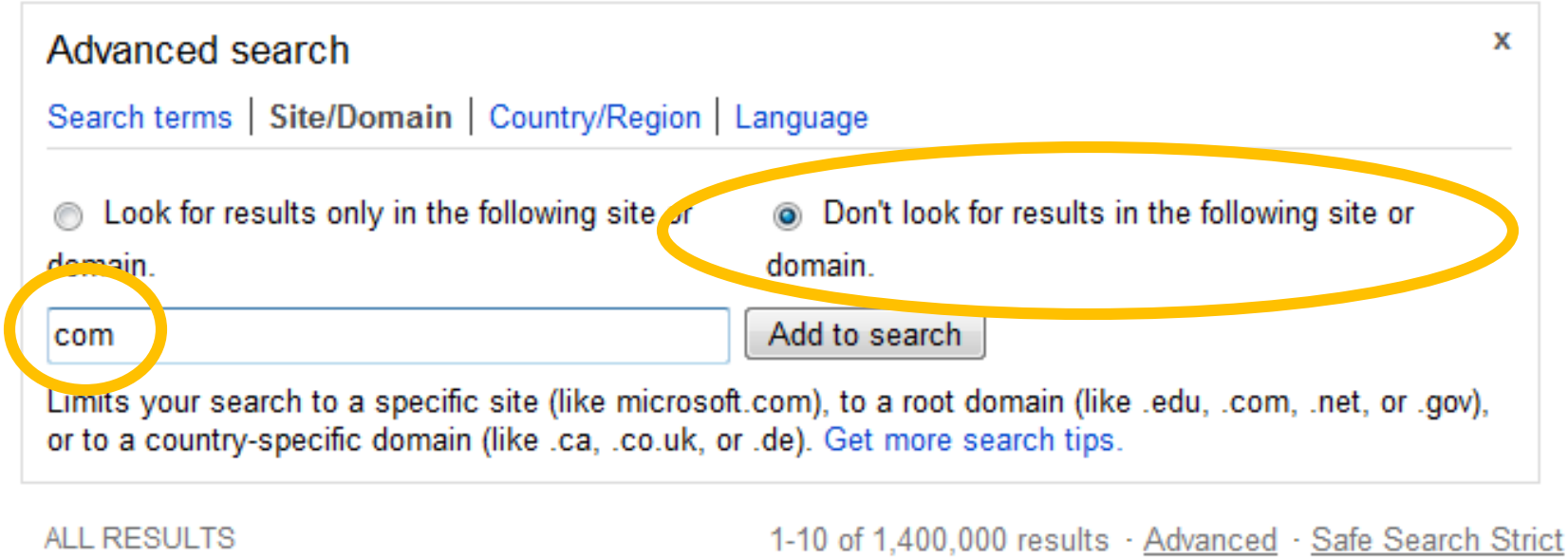
I got 1,400,000 results!



- Good sites include:
  - .org
  - .gov
  - .edu
- Use the advanced tab to get results from these sites.

How do I search for a journal article?

Advanced Tab

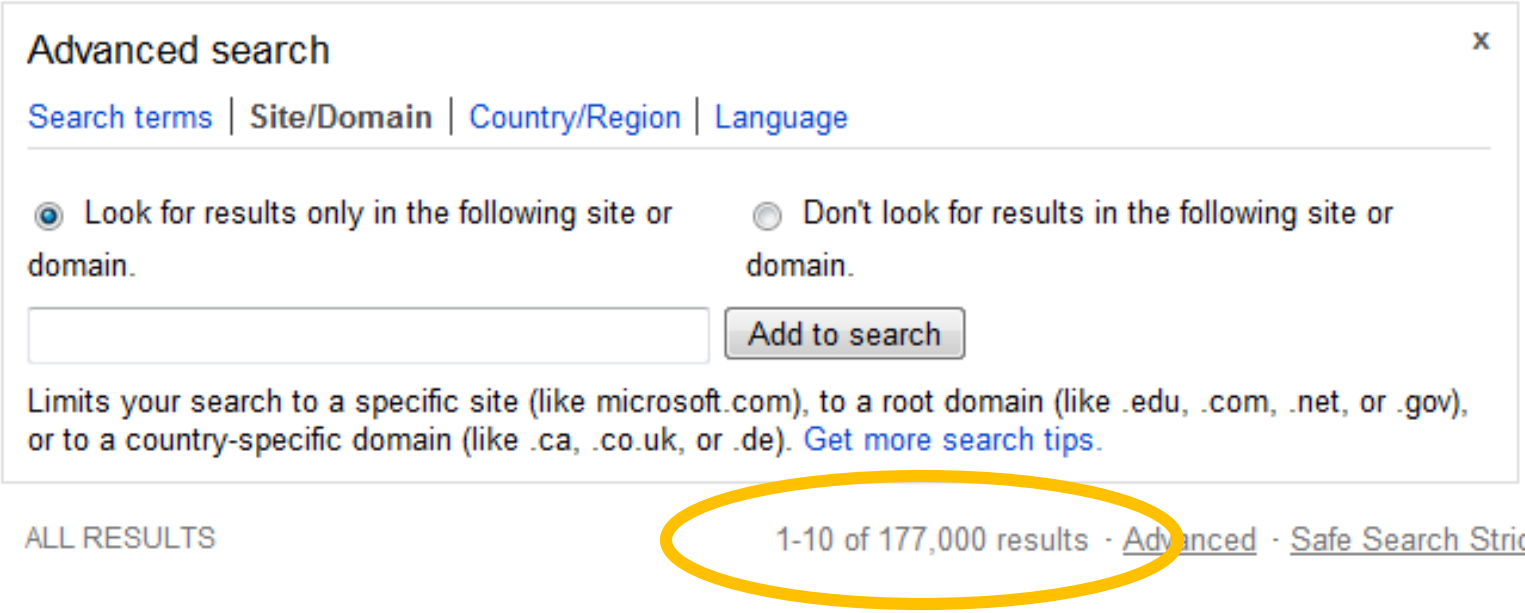


- There are 4 choices: Search Terms, Site/Domain, Country/Region, and Language.

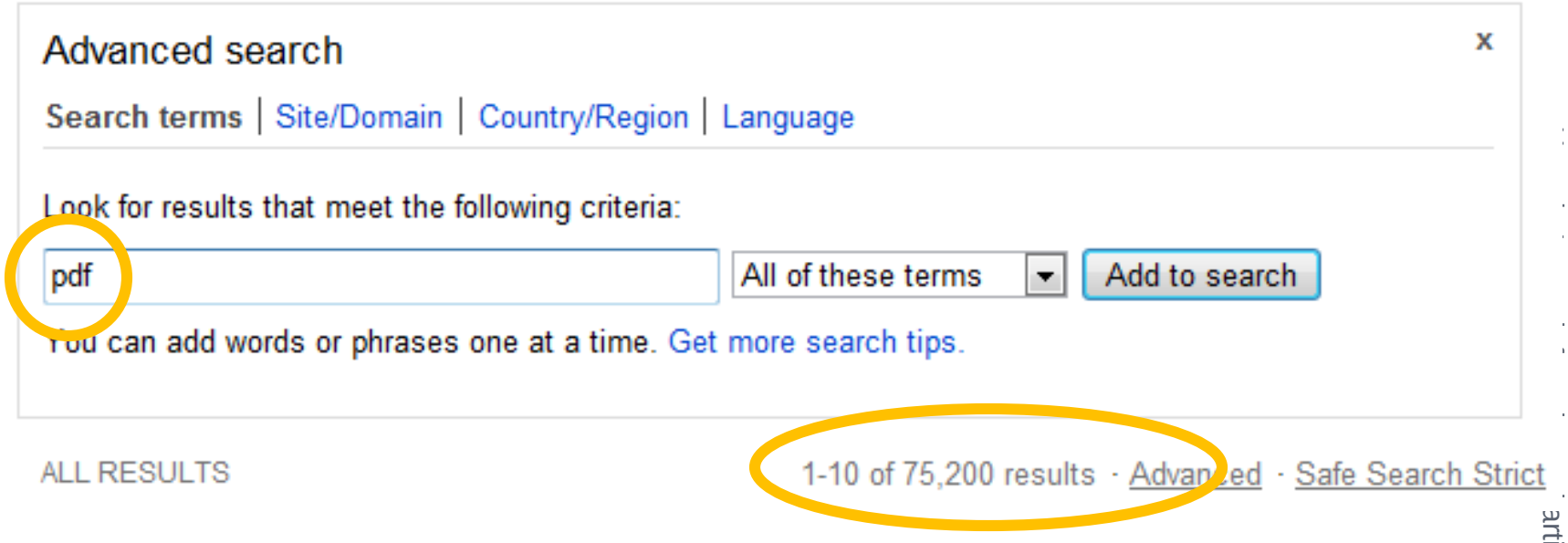
rticle?

Narrow Down Your Search

- This brought my search down to 177,000 sites!



Narrow by PDFs



- Journal articles are often found as PDFs so you can narrow your search this way.

All the options are or lead to PDFs

SUMMARY OF ASHRAE'S POSITION ON CARBON DIOXIDE \(**CO2**\) **LEVELS** IN ...

SUMMARY OF ASHRAE'S POSITION ON CARBON DIOXIDE \(**CO2**\) **LEVELS** IN SPACES ... background **CO 2 levels** are closer to 400 ppm than 300 ppm resulting in an **indoor level** of ...

www.eesinc.cc/downloads/**CO2**positionpaper.**pdf** · PDF file

Carbon Dioxide (**CO2**): Environmental Health in Minnesota

Carbon Dioxide (**CO2**) (**PDF**:40KB/2 pages) What is carbon ... The **level** of **CO 2 indoors** depends upon: the number of ... become a commonly used as a screening test of **indoor** air ...

www.health.state.mn.us/divs/eh/**indoor**air/**co2**/index.html

Guidelines for **Indoor** Air Quality - Illinois Department of Public ...

Indoor Air Quality . Awareness of **indoor** air quality issues continues to ... adequate volumes of fresh outdoor air are being introduced into **indoor** air. The outdoor **level** of ...

www.idph.state.il.us/envhealth/factsheets/**indoor**airqualityguide_fs.htm

First source may not be a journal article but…

SUMMARY OF ASHRAE'S POSITION ON CARBON DIOXIDE (CO_2) LEVELS IN SPACES

Stephen Petty, P.E., C.I.H.

Purpose of the Summary Statement:

It is widely reported by the technical community involved in indoor air evaluations that the American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) has a standard of 1,000 ppm CO_2 for indoor spaces. The Standard often cited is ANSI/ASHRAE 62-1989 "Ventilation for Acceptable Indoor Air Quality" (which has since been replaced by ANSI/ASHRAE 62-1999). However, this interpretation is incorrect.

…IF YOU READ AND SUMMARIZE…

Background:

One of the best papers addressing this issue was prepared by Mike Schell and Dan Int-Hout entitled "Demand Control Ventilation Using CO_2" published in the February, 2001, ASHRAE Journal (copy attached as Attachment A). This article points out that CO_2 has long been used as a basis for ventilation (providing fresh outdoor air to indoor spaces) design and control. CO_2 is a natural product of human respiration whose rate can be predicted based on an occupant's age and activity level. Beginning as early as 1916 (*Mechanical Engineer's Handbook* by McGraw-Hill) and found in the New York City Building Code of 1929, CO_2 of 800 to 1,000 ppm and 1,000 ppm respectively were

article?

- You'll run into many interesting leads.

Copy + Paste

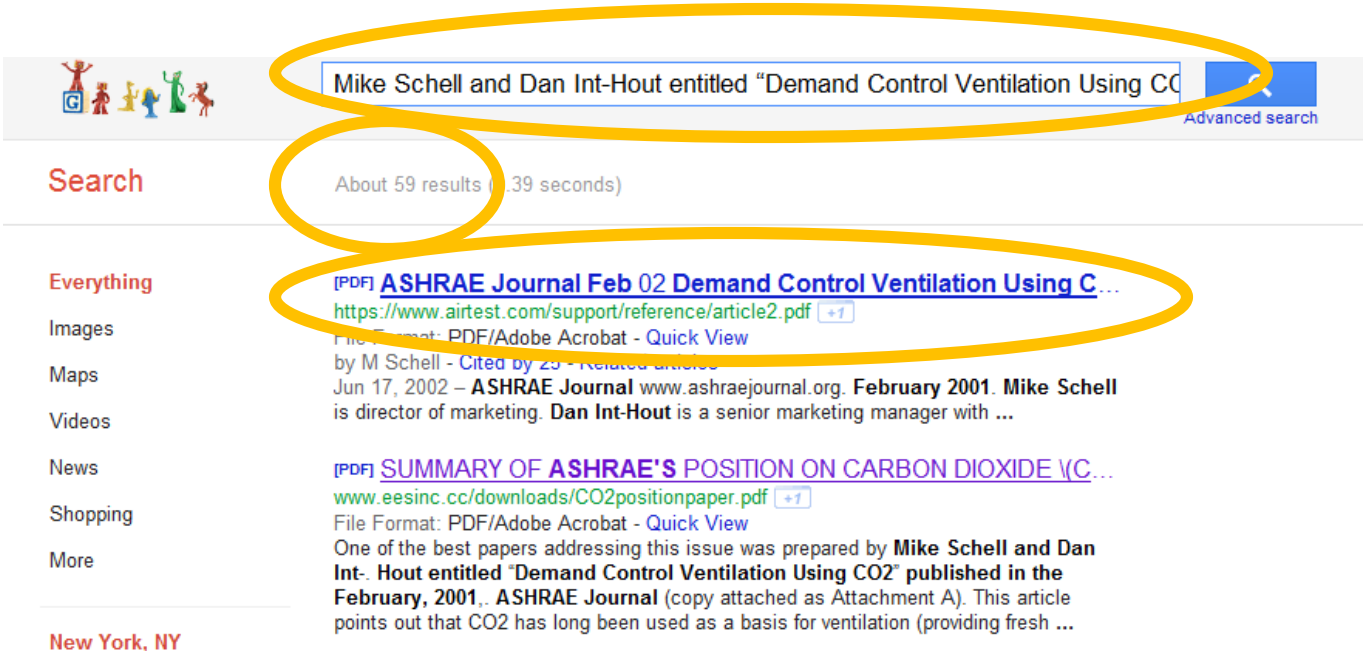
Background:

One of the best papers addressing this issue was prepared by Mike Schell and Dan Int-Hout entitled "Demand Control Ventilation Using CO_2" published in the February, 2001, ASHRAE Journal (copy attached as Attachment A). This article points out that CO_2 has long been used as a basis for ventilation (providing fresh outdoor air to indoor spaces) design and control. CO_2 is a natural product of human respiration whose rate can be predicted based on an occupant's age and activity level. Beginning as early as

- PDFs are useful in that you can copy information to paste in a new search query.

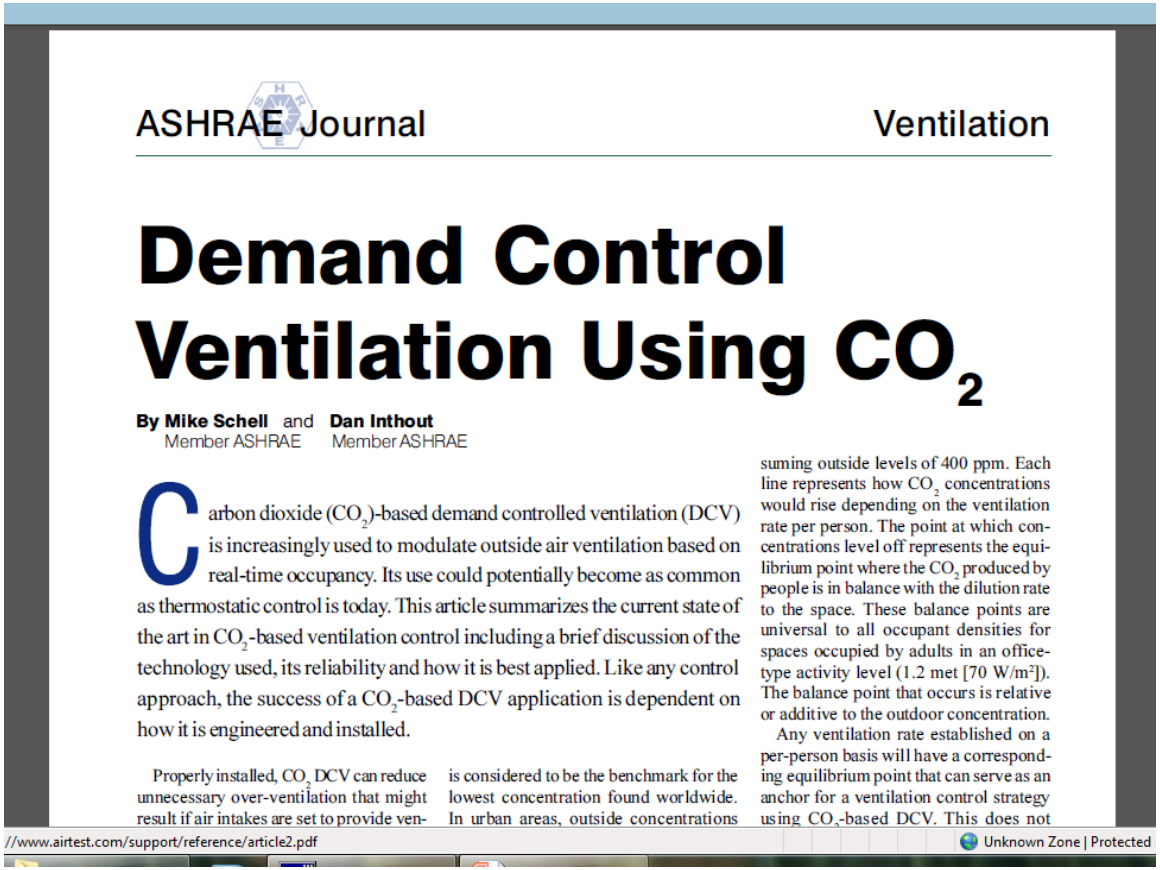
New Search Query

- This time I went to Google.com and…!



How do I search for a journal article?

Here's your first journal article.



ASHRAE Journal Ventilation

Demand Control Ventilation Using CO_2

By Mike Schell and Dan Inthout
Member ASHRAE Member ASHRAE

Carbon dioxide (CO_2)-based demand controlled ventilation (DCV) is increasingly used to modulate outside air ventilation based on real-time occupancy. Its use could potentially become as common as thermostatic control is today. This article summarizes the current state of the art in CO_2-based ventilation control including a brief discussion of the technology used, its reliability and how it is best applied. Like any control approach, the success of a CO_2-based DCV application is dependent on how it is engineered and installed.

Properly installed, CO_2 DCV can reduce unnecessary over-ventilation that might result if air intakes are set to provide ven-

is considered to be the benchmark for the lowest concentration found worldwide. In urban areas, outside concentrations

suming outside levels of 400 ppm. Each line represents how CO_2 concentrations would rise depending on the ventilation rate per person. The point at which concentrations level off represents the equilibrium point where the CO_2 produced by people is in balance with the dilution rate to the space. These balance points are universal to all occupant densities for spaces occupied by adults in an office-type activity level (1.2 met [70 W/m²]). The balance point that occurs is relative or additive to the outdoor concentration.

Any ventilation rate established on a per-person basis will have a corresponding equilibrium point that can serve as an anchor for a ventilation control strategy using CO_2-based DCV. This does not

//www.airtest.com/support/reference/article2.pdf Unknown Zone | Protected

How do I search for a journal article?

References for more articles.

ting.

and are often substantial enough to help pay for other system or building upgrades.

- The payback from CO_2 DCV will be greatest in higher density spaces that are subject to variable or intermittent occupancy that would have normally used a fixed ventilation strategy (e.g., theaters, schools, retail establishments, meeting and conference areas).
- In spaces with more static occupancies (e.g., offices), CO_2 DCV can provide control and verification that adequate ventilation is provided to all spaces. For example, a building operator may arbitrarily and accidentally establish a fixed air intake damper position that results in over or under ventila-

References

1. Keeling, C.D. and T.P. Whorf. "Atmospheric carbon dioxide record for Mauna Loa, Hawaii 1958-1998." Scripps Institution of Oceanography, University of California.
2. ANSI/ASHRAE Standard 62-1999, *Ventilation for Acceptable Indoor Air Quality*.
3. Marks, L.S., ed. 1916. *Mechanical Engineers Handbook*. McGraw-Hill Book Company.
4. 1929.New York City Building Code, City of New York N.Y.
5. ANSI/ASHRAE Standard 62-1999, *Ventilation for Acceptable Indoor Air Quality*.
6. ASHRAE. 1997. Interpretation IC 62-1989-27 for ASHRAE Standard 62-1989.

ASHRAE Journal

7. Schell, M.B., S.C. Turner, R.O. Shim. 1998. "Application of CO_2-based demand controlled ventilation using ASHRAE Standard 62-1989: optimizing energy use and ventilation." *ASHRAE Transactions* 104(2):1213–1225.
8. 1989. International Mechanical Code.
9. 1989. Commentary to the International Mechanical Code.
10. Emmerich S.J., A.K. Persily 1997. "A literature review on CO_2-based demand controlled ventilation." *ASHRAE Transactions* 103(2):229–243.

How do I search for a journal article?

Perform more queries with different key words + "Journal"

How do I search for a journal article?

You may end up on a page that asks you to pay.

ScienceDirect - Chemosphere : Indoor and outdoor air quality investigation at schools in Hong K - Windows Internet Explorer pro

http://www.sciencedirect.com/science/article/pii/S0045653599003963

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Chemosphere
Volume 41, Issues 1-2, July 2000, Pages 109-113

doi:10.1016/S0045-6535(99)00396-3 | How to Cite or Link Using DOI

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Indoor and outdoor air quality investigation at schools in Hong Kong

S.C Lee , M Chang

Environmental Engineering Unit, Department of Civil and Structural Engineering, The Hong Kong Polytechnic University, Hung Hom, Kowloon, Hong Kong SAR, People's Republic of China

Purchase

Available online 13 March 2000.

Abstract

Five classrooms in Hong Kong (HK), air-conditioned or ceiling fans ventilated, were chosen for investigation of indoor and outdoor air quality. Parameters such as temperature, relative humidity (RH), carbon dioxide (CO_2), sulphur dioxide (SO_2), nitric oxide (NO), nitrogen dioxide (NO_2), respirable particulate matter (PM_{10}), formaldehyde (HCHO), and total bacteria counts were monitored indoors and outdoors simultaneously. The average respirable particulate matter concentrations were higher than the HK Objective, and the maximum indoor PM_{10} level exceeded 1000 μg/m^3. Indoor CO_2 concentrations often exceeded 1000 μl/l in air-conditioning and ceiling fan classrooms, indicating inadequate ventilation. Maximum indoor CO_2 level reached 5900 μl/l during class at the classroom with cooling tower ventilation. Increasing the rate of ventilation or implementation of breaks between classes is recommended to alleviate the high CO_2 level. Other pollution parameters measured in this study complied with the standards. The two most important classroom air quality problems in Hong

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Read the Abstract

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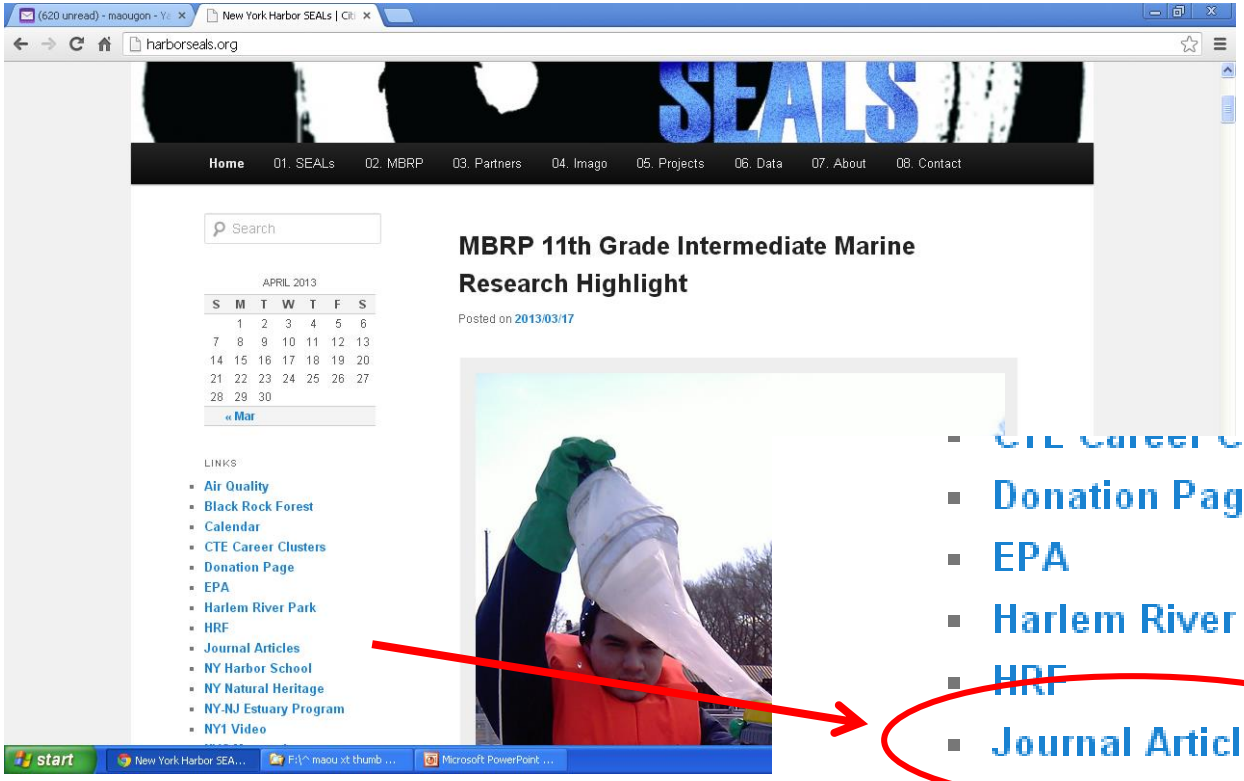
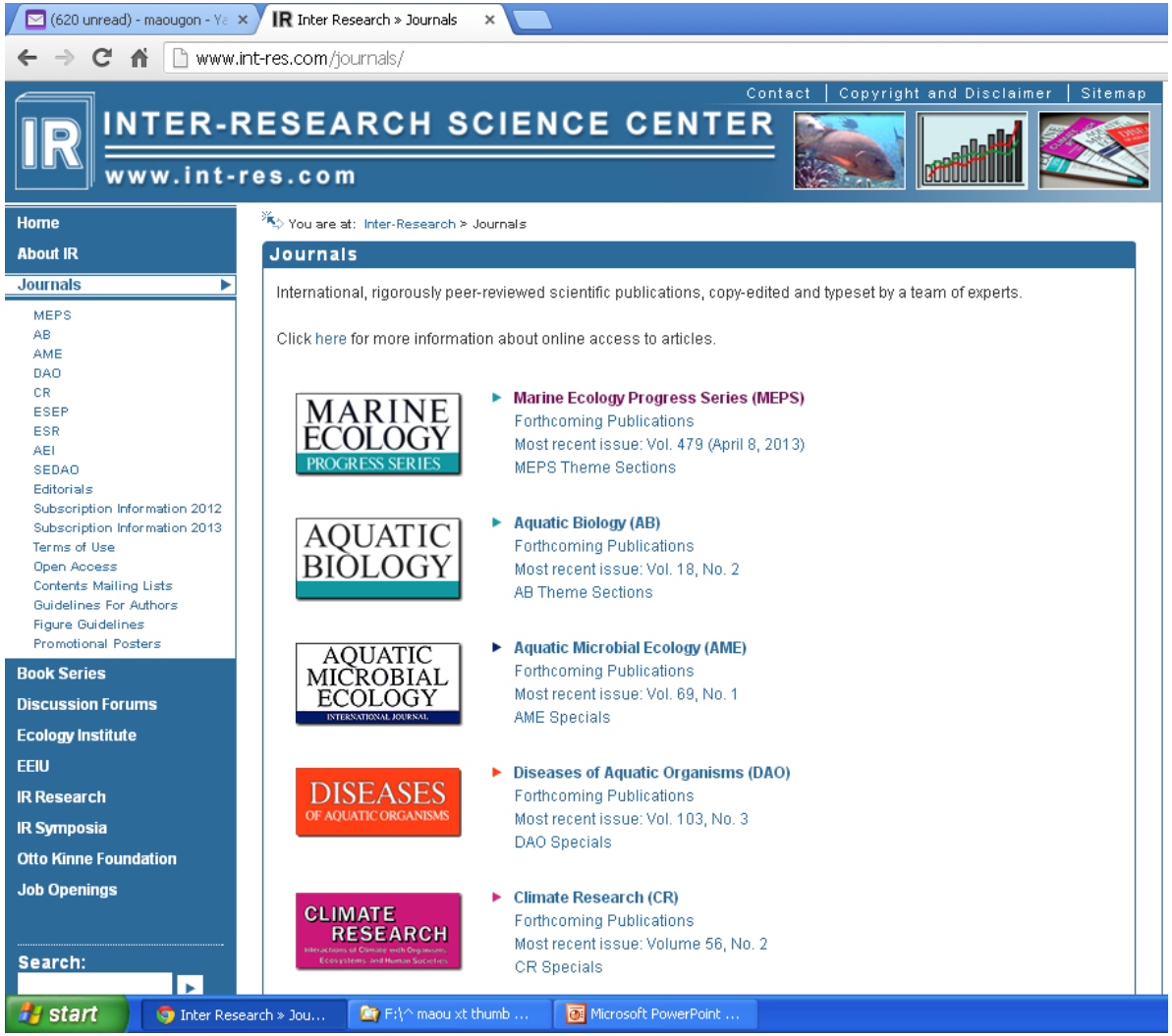
Don't buy it…

- Read summary.
- Determine with mentor/advisor or me if it's good.
- E-mail bibliography to me if your mentor cannot get it.

Harbor SEALs web page





Inter-Research Science Center – Free PRJAs

Inter-Research Science Center – Free PRJAs

Journal Article Sources

- JSTOR.com
- http://www.int-res.com/journals/
- Google Scholar
- Grolier
- EBSCO
- GALE

Other search sites/places

- www.Science.gov
- PubMed
- Online texts: HTTP://WWW.SCRIBD.COM/
- Interlibrary Loan (ILL) – Ask the librarian to help you with this.
- University Libraries (*e.g.* Columbia)
- NY Public Library of Science and Engineering
- Google: "Current Research Science"

Journal Article Key

New York HARBOR SCHOOL

GUIDELINE FOR SELECTION OF A RESEARCH PAPER FOR PRESENTATION
(Excerpted from T. Danahy, Nanuet Senior High School)

Selecting an appropriate article for presentation can be a daunting task for a student new to research. While any Ph.D. level article **can** be presented, many articles are much harder to present than others. Literature review-type papers, while valuable for their multiple reference citations, are not suitable for a student presentation and should be avoided. We suggest choosing several research articles and applying the following key to help select the best one for presentation:

- Read the abstract.
  If the topic is of interest – continue.
  If not – stop – find another article.

- Find and read the hypothesis or statement of purpose of the article (usually in the last paragraph of the introduction).
  If it is well-defined and interesting – continue.
  If not – stop – find another article.

- Find and read the methodology section.
  If methods are spelled-out in clear detail – continue.
  If not – stop – find another article.

- Review the data presented.
  If good charts or graphs are presented or if data is neatly organized into tabular form – continue.
  If not – stop – find another article.

- Review the conclusion(s) (may be found in a 'conclusion' section or in the 'discussion' section.
  If the conclusion(s) relate to each hypothesis (either support or fails to support) – this paper could be used.
  If not – find another article.

If you really must speed up the selection process, find an adequate abstract, hypothesis, and conclusion before reading the entire article.

How many PRJAs should you read?

- 11th and 12th graders should read between 5 and 10 PRJAs for their projects.
- 10th graders will find at least 5 but choose one to read from beginning to end.

2 Summer College Credits

- If you:
  - choose a topic,
  - read and summarize 5 PRJAs then…
- You may apply for *2* college credits

Keep in mind that one of the purposes of reading is to become a high school *expert* in your topic!

How many PRJAs should you read?

- Remember, success in college and career depends on how you challenge yourself.
- "Don't live life like it's a sprint, live it like it's a marathon!"

CW - HW

- AEM draft due first day of next school week
- 6 general articles printed out
- 1 PRJA that you like after reading several abstracts