IMPLEMENTING NEW BIBLIOMETRIC SERVICES

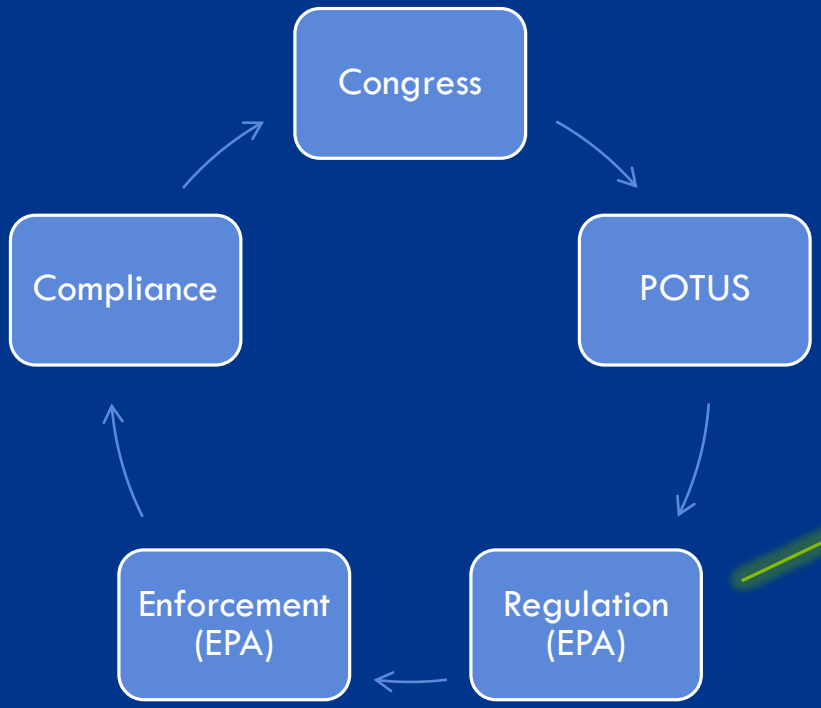
AT THE US EPA–RTP LIBRARY

ANTHONY HOLDERIED
TAYLOR ABERNETHY
UNC CONTRACTORS

EPA-RTP LIBRARY

…to protect human health and the environment

CLEAN AIR ACT



Rules:
Proposed
Public Comment
Final

ENVIRONMENTAL PROTECTION AGENCY

ENVIRONMENTAL PROTECTION AGENCY

RESEARCH TRIANGLE PARK

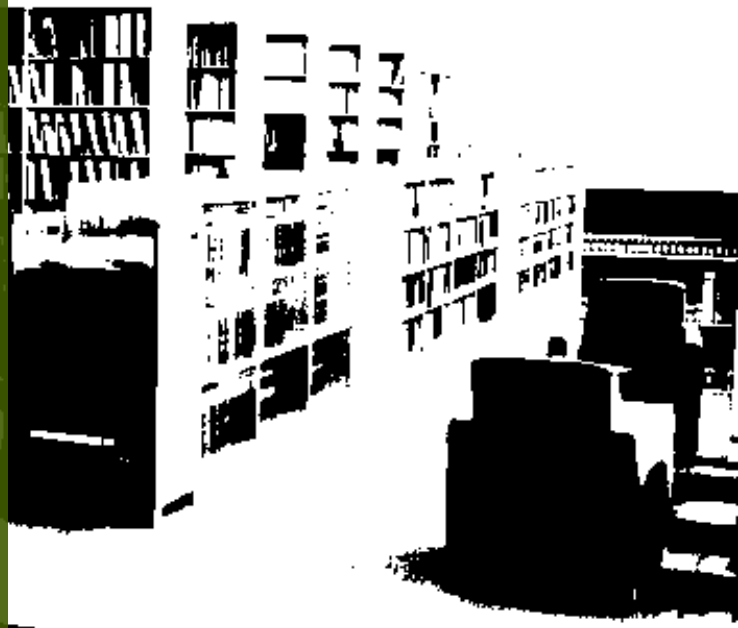
Research Offices and Laboratories:

- **Office of Air and Radiation**
- Office of Research and Development
  - National Exposure Research Laboratory (NERL)
  - National Health and Environmental Effects Research (NHEERL)
  - National Risk Management Research Laboratory (NRMRL)
  - National Center for Environmental Assessment (NCEA)
  - National Center for Computational Toxicology (NCCT)
  - National Center for Environmental Research (NCER)
  - National Homeland Security Research Center (NHSRC)

EPA-RTP RESEARCH

EPA-RTP LIBRARY

"The mission of the EPA Library is to provide a broad range of information support services to enable the research, standards setting, and administrative personnel of EPA/RTP to spend their time using information rather than searching for it."



One of 26 libraries in National Library Network

- **One of three repositories**
- **Highest foot traffic, reference transactions, ILL requests**
- **Top research facility**

EPA-RTP LIBRARY

Staffed by contractors through UNC-SILS since 1975!

Five full-time staff

Eight student interns

Services Include

- **Interlibrary Loan**
- **Literature Searching**
- **Reference**
- **Instruction**
- **EPA Document Publishing**
- **EndNote Support**

SINCE THE BEGINNING…

Services provided without marketing:

Quick Reference

- Impact factor, times cited, H-index (awards, evaluation)

Training

- Formal & Informal (WoS, JCR, Plum Analytics, Altmetric, Impact Story)

Extended Reference

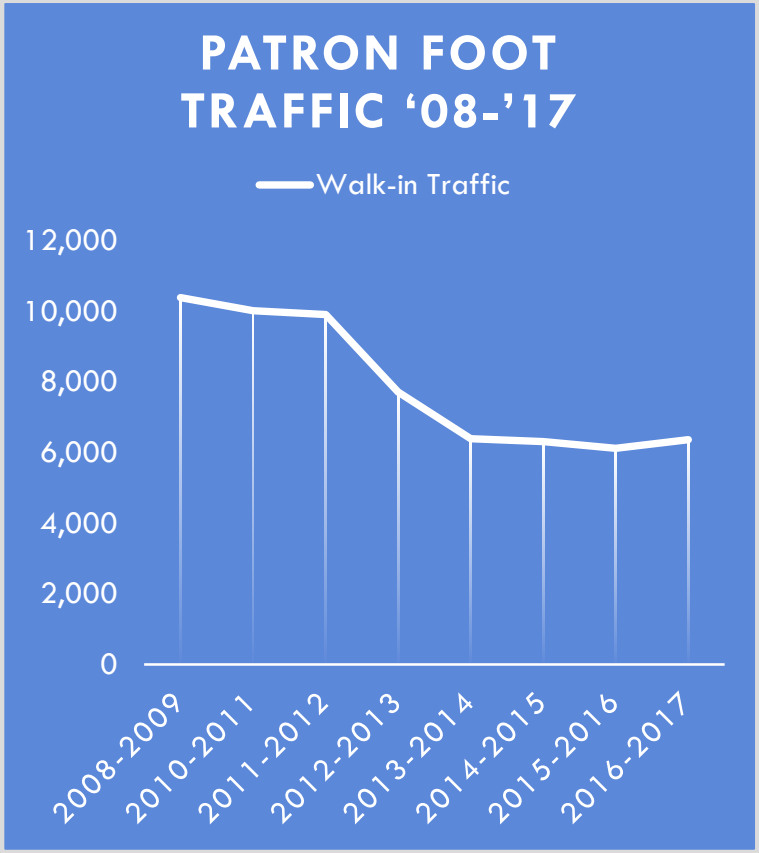
- Metrics for an individual's publications

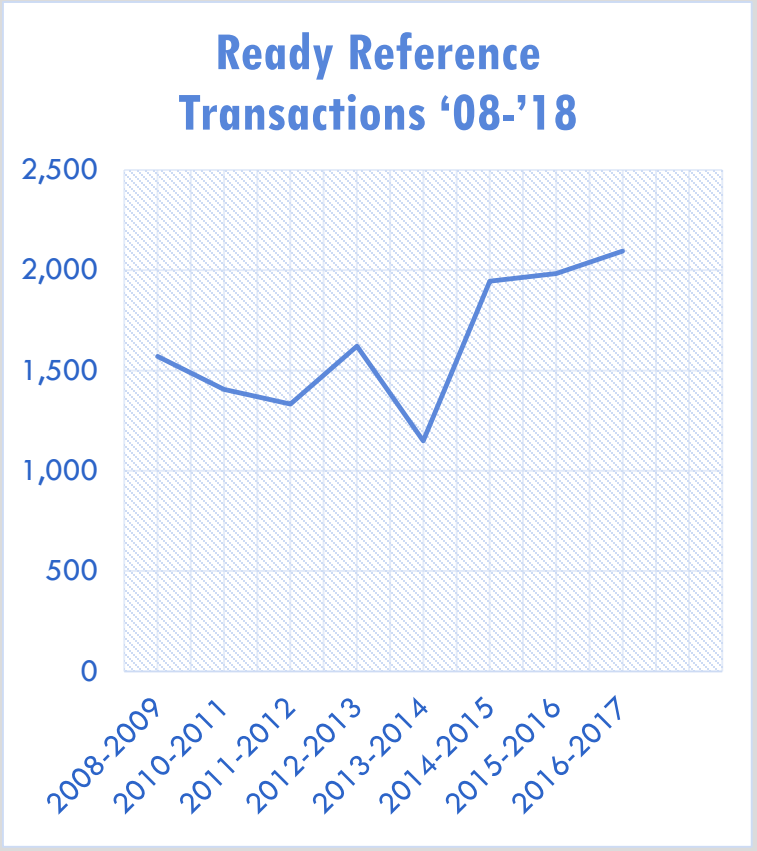
Large Projects

- Metrics for programs & teams; alerts

} Information Need Established

WHY BIBLIOLMETRICS SERVICES?





RESEARCH

What will this look like?

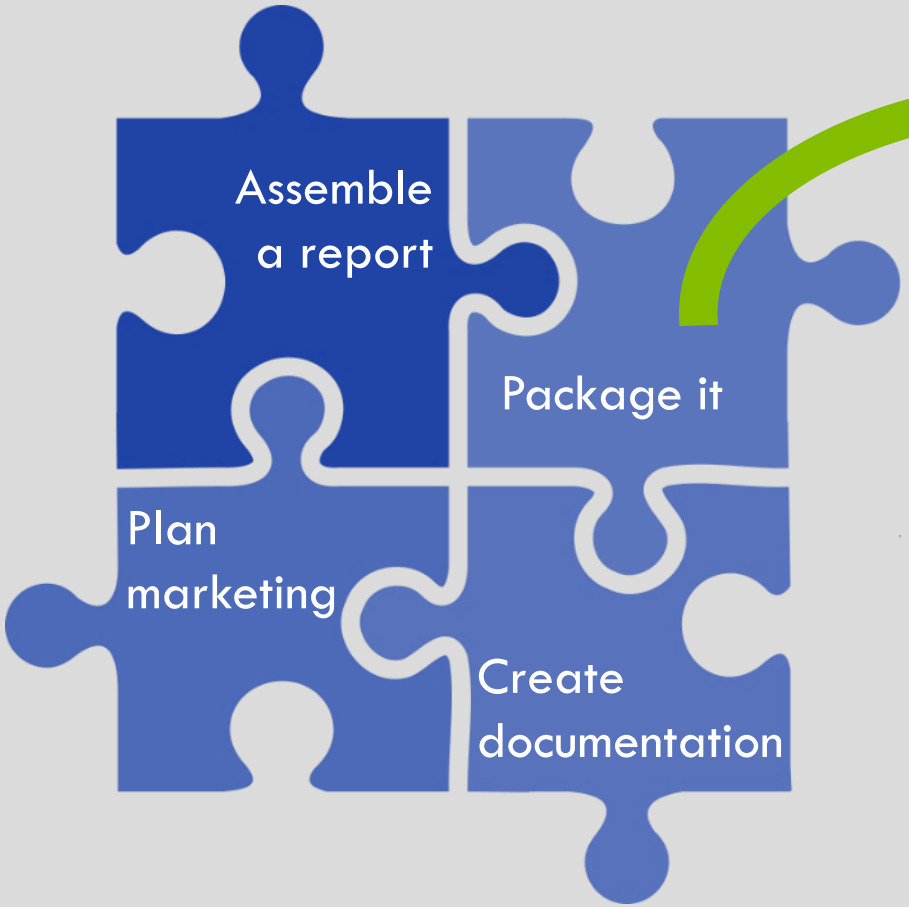
- Cost
  - New tools/resources
  - Human resources
    - Existing staff
    - New position
    - Training
- Scale
  - Individuals vs. groups
  - Time commitment
- Deliverable
  - Formats
- Marketing
  - Overall strategy
  - Roll-out/Ongoing
  - Outsource/In-house

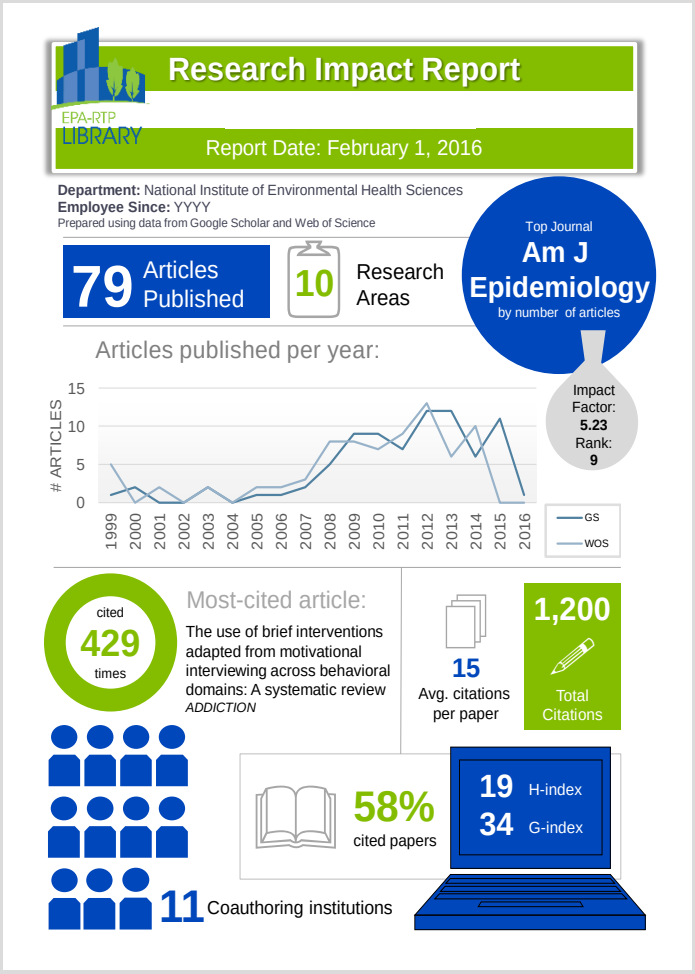
YES!

BUT HOW?

- Balancing scope with time & resources
  - Use free and existing tools to add value
  - Training vs. seeking skills
- Focus on the individual
  - Funding & awards
  - Career advancement

PROTOTYPE


Assemble a report
Package it
Plan marketing
Create documentation

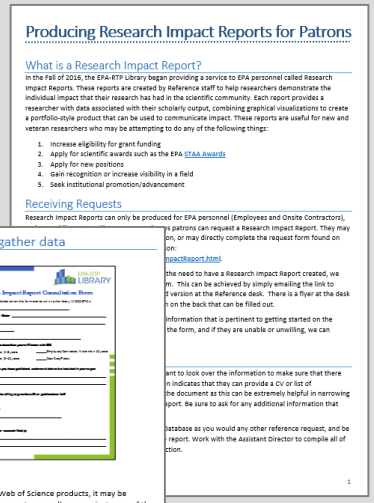

Research Impact Report
EPA-RTP LIBRARY
Report Date: February 1, 2016
Department: National Institute of Environmental Health Sciences
Employee Since: YYYY
Prepared using data from Google Scholar and Web of Science
79 Articles Published
10 Research Areas
Top Journal
Am J Epidemiology
by number of articles
Impact Factor: 5.23
Rank: 9
Articles published per year:
ARTICLES
15
10
5
0
1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
GS
WOS
cited 429 times
Most-cited article:
The use of brief interventions adapted from motivational interviewing across behavioral domains: A systematic review
ADDICTION
15
Avg. citations per paper
1,200
Total Citations
58%
cited papers
19 H-index
34 G-index
11 Coauthoring institutions

THE PRODUCT: RESEARCH IMPACT REPORT

- Analyzes a set of publications
- Presents author, article, journal-level metrics
- Packages data with graphical illustrations

PRELIMINARY FEEDBACK & ROLLOUT

- Present
  - NCLA RASS Current Trends in Reference Virtual Series
  - LAUNC-CH
- Update the graphics & instructions
- Test (soft rollout)
  - Add funding agencies
  - Add alternative metrics
- Promote (hard rollout)
  - at annual Open House
  - Collaborate with graphics team for marketing campaign
  - Conducted “Measuring Your Research Impact” class


Producing Research Impact Reports for Patrons

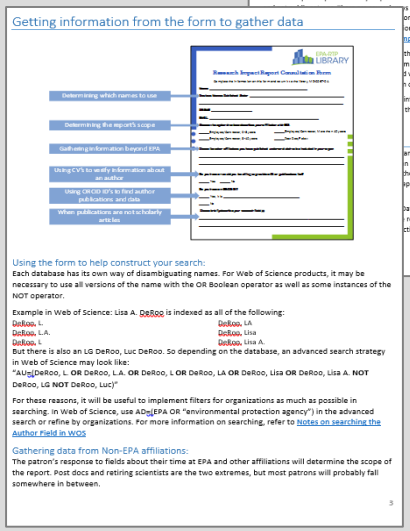
What is a Research Impact Report?

In the Fall of 2016, the EPA-RTP Library began providing a service to EPA personnel called Research Impact Reports. These reports are created by Reference staff to help researchers demonstrate the individual impact that their research has had in the scientific community. Each report provides a researcher with data associated with their scholarly output, combining graphical visualizations to create a portfolio-style product that can be used to communicate impact. These reports are useful for new and veteran researchers who may be attempting to do any of the following things:

1. Increase eligibility for grant funding
2. Apply for scientific awards such as the EPA STAA Awards
3. Apply for new positions
4. Gain recognition or increase visibility in a field
5. Seek institutional promotion/advancement

Receiving Requests

Research Impact Reports can only be produced for EPA personnel (Employees and Onsite Contractors),


Getting information from the form to gather data

Using the form to help construct your search:

Each database has its own way of disambiguating names. For Web of Science products, it may be necessary to use all versions of the name with the OR Boolean operator as well as some instances of the NOT operator.

Example in Web of Science: Lisa A. DeRoo is indexed as all of the following:

DeRoo, L.
DeRoo, L.A.
DeRoo, L
DeRoo, LA
DeRoo, Lisa
DeRoo, Lisa A.

But there is also an LG DeRoo, Luc DeRoo. So depending on the database, an advanced search strategy in Web of Science may look like:

“AU=(DeRoo, L. **OR** DeRoo, L.A. **OR** DeRoo, L **OR** DeRoo, LA **OR** DeRoo, Lisa **OR** DeRoo, Lisa A. **NOT** DeRoo, LG **NOT** DeRoo, Luc)”

For these reasons, it will be useful to implement filters for organizations as much as possible in searching. In Web of Science, use AD=(EPA OR “environmental protection agency”) in the advanced search or refine by organizations. For more information on searching, refer to Notes on searching the Author Field in WOS

Gathering data from Non-EPA affiliations:

The patron’s response to fields about their time at EPA and other affiliations will determine the scope of the report. Post docs and retiring scientists are the two extremes, but most patrons will probably fall somewhere in between.

2 reports requested!

Research Impact Report

EPA-RTP LIBRARY

Hermione Granger

Report Date: December 16, 2016

Research Toxicologist, National Health and Environmental Effects Laboratory
United States Environmental Protection Agency
Employee Since: 1995

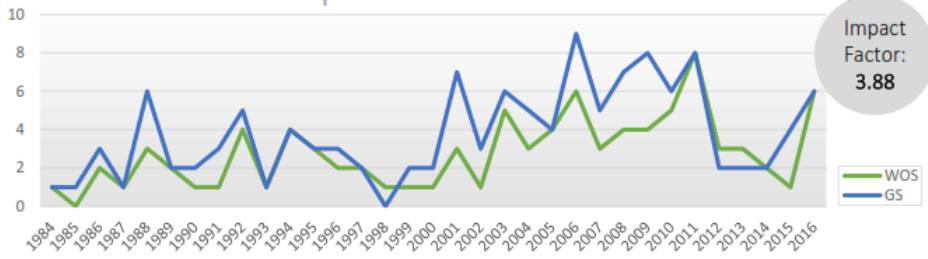
206 Items Published

20 Research Areas

Top Journal
Toxicological Sciences
by number of articles

Impact Factor: **3.88**

Articles Published per Year



cited **978** times

Most-cited article:
Arsenic toxicity and potential mechanisms of action
TOXICOLOGY LETTERS

Avg. citations per paper **31**

3,958 Total Citations

31 Coauthoring institutions

73% cited papers

28 H-index
62 G-index

Prepared using data from Google Scholar and Web of Science

Research Impact Report – XXXXX YYYY

Prepared by the EPA-RTP Library, December 16, 2016

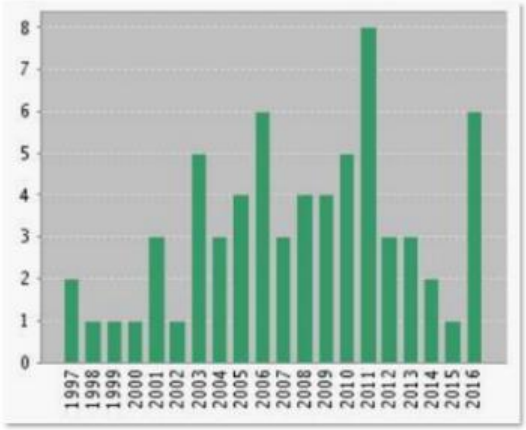
Overview of Citation Metrics from Web of Science

Results found: 91
Sum of the Times Cited: 2807
Sum of Times Cited without self-citations: 2658
Citing Articles: 2307
Citing Articles without self-citations: 2253
Average Citations per Item: 30.85
H-index: 26

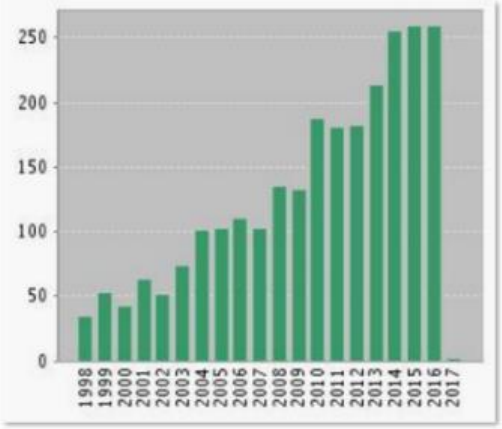
Overview of Citation Metrics from Google Scholar

Results found: 139
Sum of the Times Cited: 3958
Average Citations per Item: 28.47
H-index: 28
G-index: 62

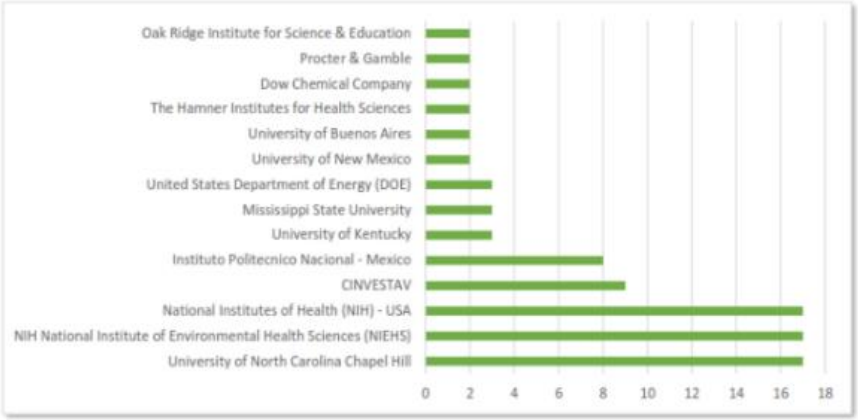
Published Items Each Year from Web of Science



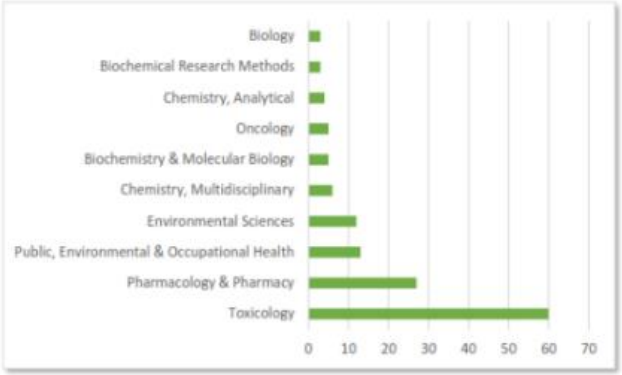
Citations Each Year in Web of Science



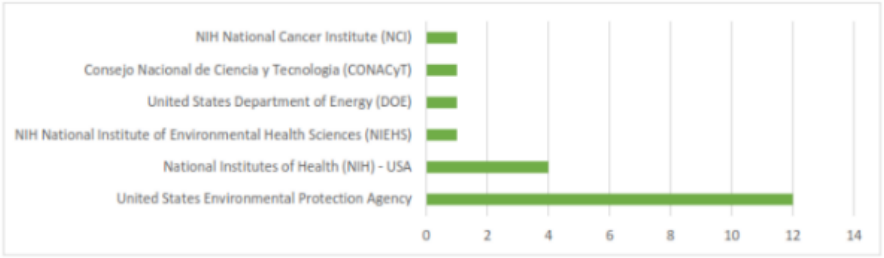
Top Institutional Co-Authors



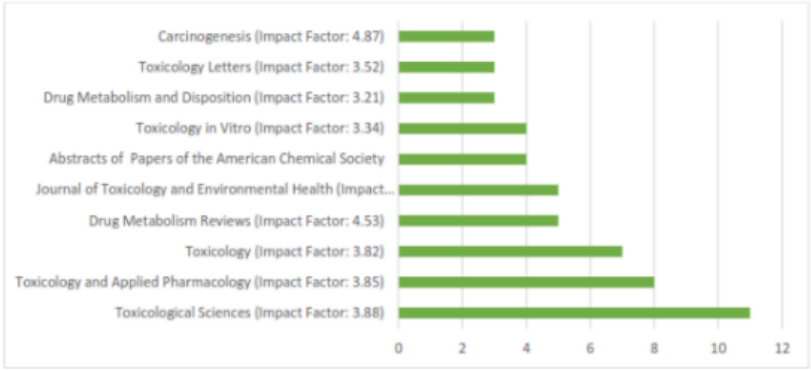
Article Distribution by Research Category



Funding Agency Support by Number of Articles



Top Journals by Number of Articles



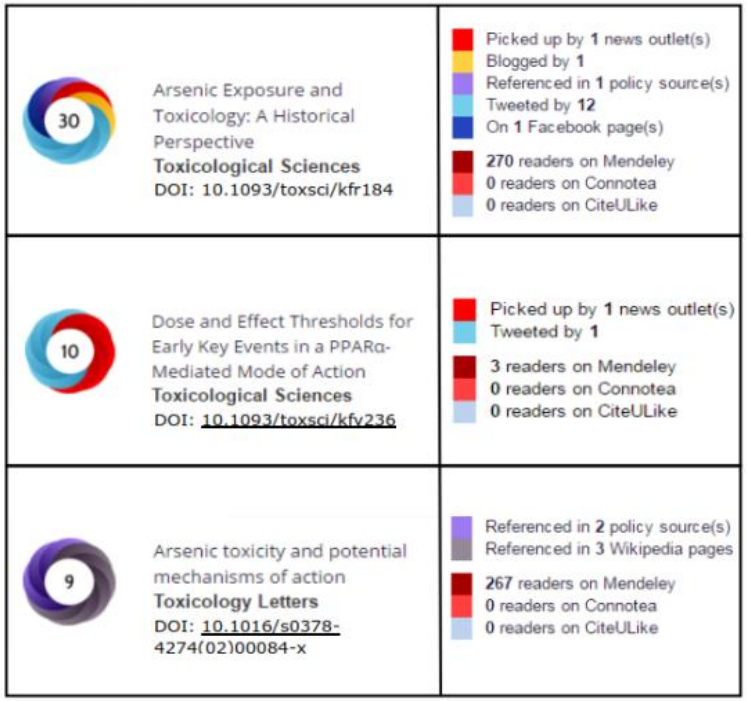
Top Journals by JCR Category Ranking

Journal Title	JCR Category	Journal Rank in Category
Carcinogenesis	Oncology	37
Drug Metabolism and Disposition	Pharmacology & Pharmacy	67
Drug Metabolism Reviews	Pharmacology & Pharmacy	32
Journal of Toxicology and Environmental Health	Environmental Sciences	53
	Public, Environmental & Occupational Health	42
	Toxicology	44
Toxicological Sciences	Toxicology	11
Toxicology	Pharmacology & Pharmacy	51
	Toxicology	13
Toxicology and Applied Pharmacology	Pharmacology & Pharmacy	48
	Toxicology	12
Toxicology in Vitro	Toxicology	19
Toxicology Letters	Toxicology	18
Non-Journals		
Abstracts of Papers of the American Chemical Society		

JCR Metrics for Top Journals

Name	Journal Impact Factor	5 Year Impact Factor	Immediacy Index	Cited Half Life	Article Influence	Eigenfactor
Toxicological Sciences	3.88	4.307	0.903	7.6	1.18	0.02428
Toxicology and Applied Pharmacology	3.847	4.01	0.735	7.9	1.007	0.02387
Toxicology	3.817	3.967	0.912	9	0.999	0.01462
Drug Metabolism Reviews	4.526	5.572	0.559	9.2	1.628	0.0034
Journal of Toxicology and Environmental Health	1.805	2.188	0.275	7.2	0.561	0.00945
Toxicology in Vitro	3.338	3.285	0.715	5.8	0.73	0.01261
Drug Metabolism and Disposition	3.21	3.25	0.966	8.4	0.845	0.01699
Toxicology Letters	3.522	3.571	0.625	7	0.879	0.02027
Carcinogenesis	4.874	5.368	0.967	8	1.517	0.03371

Top 20% Highest Scoring Altmetric Articles



Source name	Definition
Twitter	Collection of tweets, retweets, and quoted tweets with links to scholarly content
Facebook	Monitors Public Facebook Pages and posts
Policy documents	Scans and text-mines policy document PDFs for references; connected to CrossRef and PubMed for DOIs
News	Manually curated data provided from third-parties and RSS feeds
Blogs	Manually curated list, attempts to gather posts linking to scholarly articles
Mendeley	Number of readers with the content in their library
Connotea	Online reference manager counted similar to Mendeley
CiteULike	Online reference manager counted similar to Mendeley
Wikipedia	Mentions located in References section

Record 3 of 18

Title: Arsenic Exposure and Toxicology: A Historical Perspective Highly Cited Paper

Author(s): XXXX YYYY

Source: TOXICOLOGICAL SCIENCES **Volume:** 123 **Issue:** 2 **Pages:** 305-332 **DOI:** 10.1093/toxsci/kfr184 **Published:** OCT 2011

Times Cited in Web of Science Core Collection: 221

Total Times Cited: 233

Abstract: The metalloid arsenic is a natural environmental contaminant to which humans are routinely exposed in food, water, air, and soil. Arsenic has a long history of use as a homicidal agent, but in the past 100 years arsenic, has been used as a pesticide, a chemotherapeutic agent and a constituent of consumer products. In some areas of the world, high levels of arsenic are naturally present in drinking water and are a toxicological concern. There are several structural forms and oxidation states of arsenic because it forms alloys with metals and covalent bonds with hydrogen, oxygen, carbon, and other elements. Environmentally relevant forms of arsenic are inorganic and organic existing in the trivalent or pentavalent state. Metabolism of arsenic, catalyzed by arsenic (+3 oxidation state) methyltransferase, is a sequential process of reduction from pentavalency to trivalency followed by oxidative methylation back to pentavalency. Trivalent arsenic is generally more toxicologically potent than pentavalent arsenic. Acute effects of arsenic range from gastrointestinal distress to death. Depending on the dose, chronic arsenic exposure may affect several major organ systems. A major concern of ingested arsenic is cancer, primarily of skin, bladder, and lung. The mode of action of arsenic for its disease endpoints is currently under study. Two key areas are the interaction of trivalent arsenicals with sulfur in proteins and the ability of arsenic to generate oxidative stress. With advances in technology and the recent development of animal models for arsenic carcinogenicity, understanding of the toxicology of arsenic will continue to improve.

Accession Number: WOS:000295532900001

PubMed ID: 21750349

ISSN: 1096-6080

eISSN: 1096-0929

Record 4 of 18

Title: A concise review of the toxicity and carcinogenicity of dimethylarsinic acid

Author(s): XXXX YYYY

Source: TOXICOLOGY **Volume:** 160 **Issue:** 1-3 **Special Issue:** SI **Pages:** 227-236 **DOI:** 10.1016/S0300-483X(00)00458-3 **Published:** MAR 7 2001

Times Cited in Web of Science Core Collection: 123

Total Times Cited: 128

Abstract: Dimethylarsinic acid (DMA) has been used as a herbicide (cacodylic acid) and is the major metabolite formed after exposure to tri- (arsenite) or pentavalent (arsenate) inorganic arsenic (iAs) via ingestion or inhalation in both humans and rodents. Once viewed simply as a detoxification product of iAs, evidence has accumulated in recent years indicating that DMA itself has unique toxic properties. DMA induces an organ-specific lesion - single strand breaks in DNA - in the lungs of both mice and rats and in human lung cells in vitro. Mechanistic studies have suggested that this damage is due mainly to the peroxyl radical of DMA and production of active oxygen species by pulmonary tissues. Multi-organ initiation-promotion studies have demonstrated that DMA acts as a

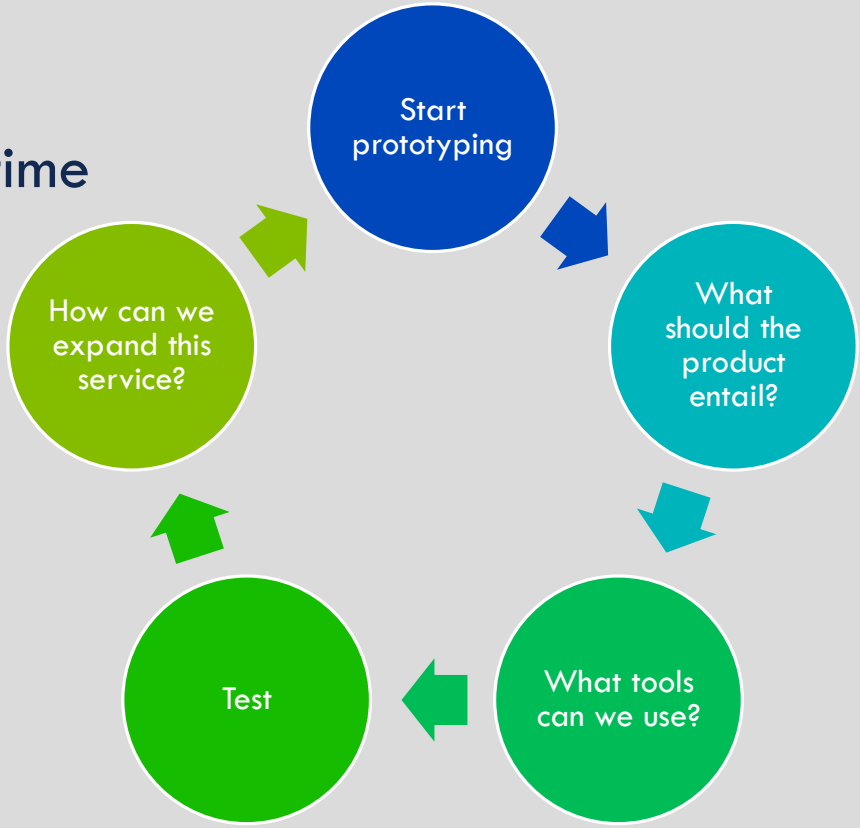
- >20 RIR's created
- Continue to revise documentation
- Reflect on feedback
- Begin to explore avenues…
  Article Impact Report

CONTINUING THE CYCLE

ARTICLE IMPACT REPORT

Like a Research Impact Report…but for a single article and based on its set of citations

- ↑ graphics, ↓ words
- Shorter in length & turnaround time
- Flexible parameters/template
- Continued the cycle
  - Targeted delivery
  - Gained feedback
  - Developed documentation



Article Impact Report

Incremental testing of the Community Multiscale Air Quality (CMAQ) modeling system version 4.7

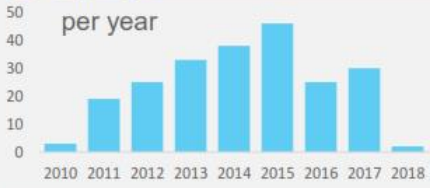
Geoscientific Model Development

Foley, KM; Roselle, SJ; Appel, KW; Bhave, PV; Pleim, JE; Otte, TL; Mathur, R; Sarwar, G; Young, JO; Gilliam, RC; Nolte, CG; Kelly, JT; Gilliland, AB; Bash, JO

Foley, KM et al. (2010). Incremental testing of the Community Multiscale Air Quality (CMAQ) modeling system version 4.7. *Geoscientific Model Development, 3*(1), 205-226. DOI 10.5194/gmd-3-205-2010

Highlights

Citations



221 Web of Science

287 Google Scholar

241 Scopus

cited in 31 countries

by authors from **251 organizations** across **48 publication titles**

Top Citing Journal
Atmospheric Environment

62 Articles

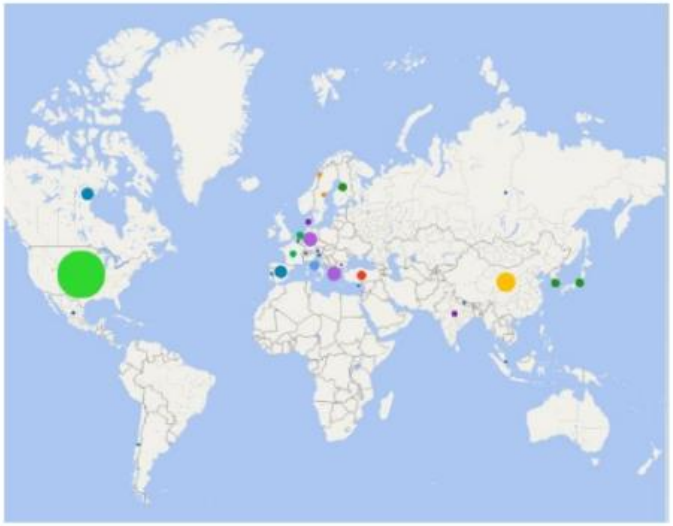
3.63 Impact Factor

3,388 article views

1,865 PDF downloads

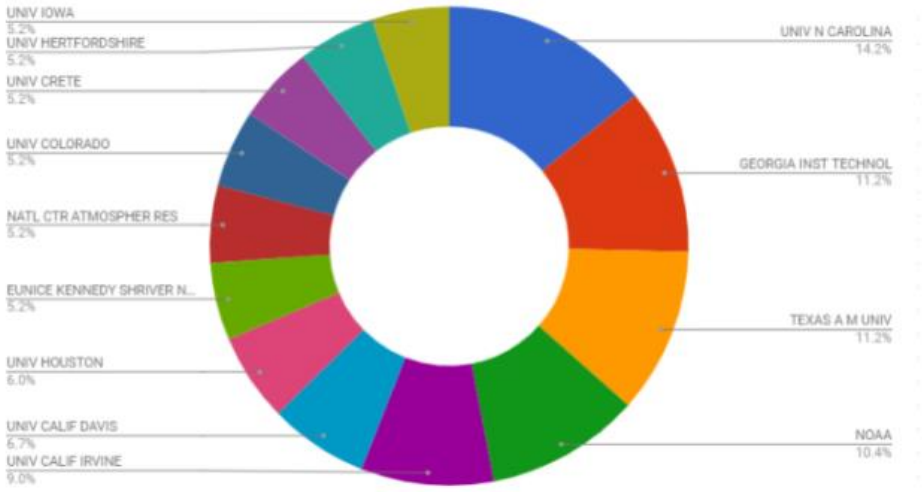
632 citation exports

Citations by Country

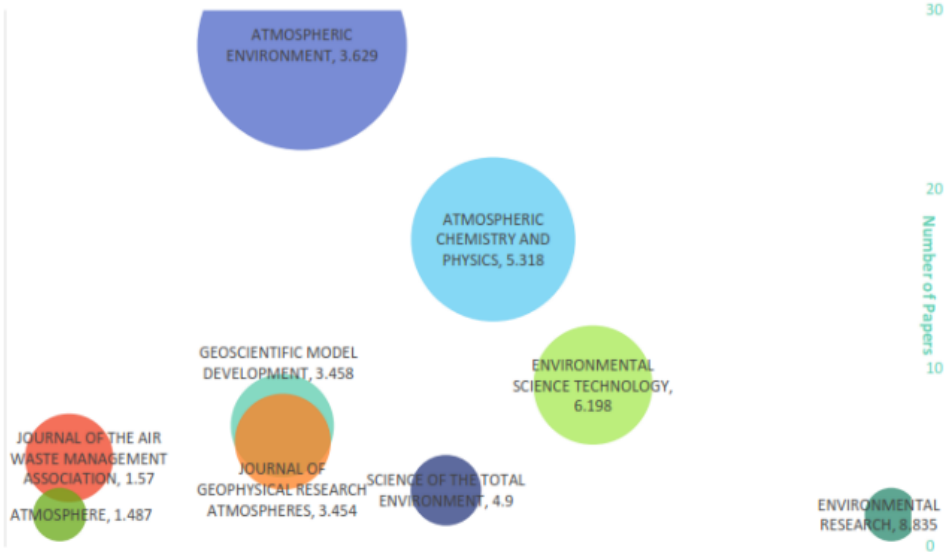


Countries	Papers
USA	180
CHINA	29
GERMANY	16
GREECE	16
CANADA	12
ENGLAND	12
SPAIN	12
ITALY	8
TURKEY	7
FINLAND	6
JAPAN	6
SOUTH KOREA	6

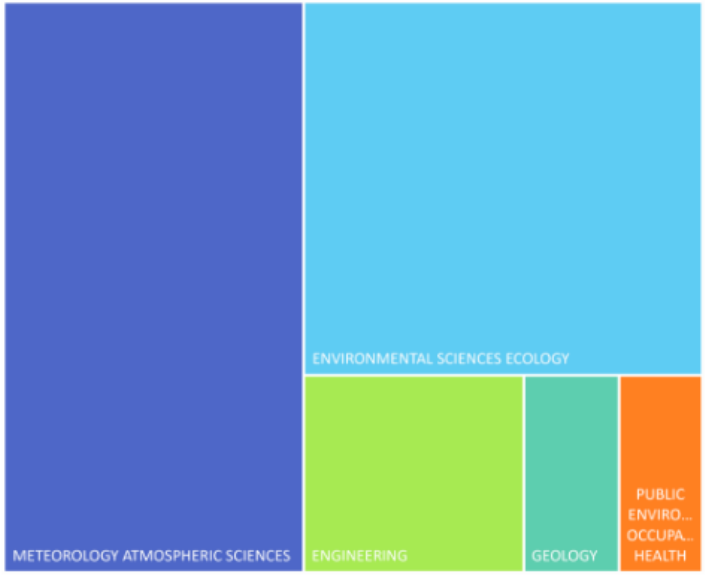
Top Citing Organizations Outside of EPA



Citing Journals (Impact Factor)



Research Areas



Research Areas	Papers
METEOROL ATMOS SCI	146
ENVIRON SCI ECOLOGY	127
ENGINEERING	37
GEOLOGY	16
PUBLIC, ENVIRON, OCCUP HEALTH	14
CHEMISTRY	4
GEOCHEMISTRY GEOPHYSICS	4
SCIENCE TECHNOLOGY	4
CARDIOVAS SYSTEM CARDIOL	2
TOXICOLOGY	2

Alternative Metrics

About this Attention Score

Good Attention Score compared to outputs of the same age (68th percentile)

High Attention Score compared to outputs of the same age and source (88th percentile)

LESS...

Mentioned by

1 policy source

Citations

241 Scopus

Readers on

75 Mendeley

Most viewed in **March 2014**

Article Metrics	
HTML Downloads	1,372
PDF Downloads	1,865
Total Views	3,388
Cross Ref Citations	164

Web of Science Metrics	
Core Collection Citations	221
Citations in All Databases	234
Uses in Last 180 Days	5
Uses Since 2013	61

Highly Cited Paper

received enough citations to place it in the top 1% of the academic field of Geosciences based on a highly cited threshold for the field and publication year

Guidance for Quantifying the Contribution of Airport Emissions to Local Air Quality

Cited by National Academies Press on 27 May 2015

Clarivate Analytics	IF 3.458
Clarivate Analytics	IF 5-year 5.066
Scopus	CiteScore 3.89
CWTS	SNIP 1.172
SJR	SJR 2.855
CWTS	IPP 3.510

Journal Metrics for

Geoscientific Model Development

About the Report

This report was compiled using data from Web of Science, Google Scholar, Altmetrics, and other databases when necessary. It is a snapshot of a particular article where the impact has been determined by analyzing various information about the papers citing that article. By collecting and organizing these statistics, a picture of reach, popularity, and value is created.

Citations by Country

The origin of the citing papers as determined by author addresses. All records are shown on the graphic, and the logical threshold is displayed in the accompanying table.

Top Citing Organizations

The listed author affiliations of citing articles. Percentage is determined using a logical threshold where the remaining percent of the whole would be considered “other.”

Citing Journals

The volume of citing papers per journal title compared to other titles citing the paper, displayed along with the journal’s impact factor for the report year. In the graphic:

- position along the x axis is determined by the journal impact factor
- position along the y axis is determined by the number of citing papers published in the source title
- size is determined by the percentage of citing papers published in the specific source title compared to all other titles

Research Areas

The scientific category for each citing paper. A logical threshold is displayed in the graphic, and an expansion is shown in the accompanying table.

Alternative Metrics

Metrics gathered using Altmetrics, publisher website data, and other sources including but not limited to those listed in the Altmetic doughnut:

Source name	Definition
Twitter	Collection of tweets, retweets, and quoted tweets with links to scholarly content
Facebook	Monitors Public Facebook Pages and posts
Policy documents	Scans and text-mines policy document PDFs for references; connected to CrossRef and PubMed for DOIs
News	Manually curated data provided from third-parties and RSS feeds
Blogs	Manually curated list, attempts to gather posts linking to scholarly articles
Mendeley	Number of readers with the content in their library
CiteULike	Online reference manager counted similar to Mendeley
Wikipedia	Mentions located in References section

CHALLENGES & LESSONS LEARNED

- Every report is different
  - Post-doc vs. seasoned researcher
  - Unique publication histories (not in scholarly lit)
- Balance is key: effort vs. reward
  - New tools require training
  - New technologies are not always widely accepted
- The revisions are never complete, but that means the possibilities are endless
  - Changing interfaces
  - Author preferences

Remember: Special requests → new services

FUTURE DIRECTIONS

Expand Scope

Hot/ Trending Articles?

Research Impact *Services*

Projecting Impact?

THANK YOU!

Anthony Holderied (UNC)
Assistant Director
(919) 541-2777
library.rtp@epa.gov

Taylor Abernethy (UNC)
User Services & Research Librarian
(919) 541-2777
library.rtp@epa.gov