Bibliometric Analysis for Papers on Topics Related to Human Health

This is a bibliometric analysis of the papers prepared by intramural and extramural researchers of the U.S. Environmental Protection Agency (EPA) human health research program. For this analysis, 839 papers were reviewed. These 839 papers, published from 1997 to 2005, were cited 8,378 times in the journals covered by Thomson s Web of Science.[1] Of these 839 papers, 697 (83%) have been cited at least once in a journal.

The analysis was completed using Thomson s Essential Science Indicators (ESI) and Journal Citation Reports (JCR) as benchmarks. ESI provides access to a unique and comprehensive compilation of essential science performance statistics and science trends data derived from Thomson s databases. The chief indicators of output, or productivity, are journal article publication counts. For influence and impact measures, ESI employs both total citation counts and cites per paper scores. The former reveals gross influence while the latter shows weighted influence, also called impact. JCR presents quantifiable statistical data that provide a systematic, objective way to evaluate the world s leading journals and their impact and influence in the global research community.

Summary of Analysis

Nearly one-quarter of the human health publications are highly cited papers. A review of the citations indicates that 204 (24.3%) of the human health papers qualify as highly cited when using the ESI criteria for the top 10% of highly cited publications. Twenty-nine (3.5%) of the human health papers qualify as highly cited when using the criteria for the top 1%. Two (0.24%) of these papers qualify as very highly cited (in the top 0.1%), and one paper actually meets the top 0.01% threshold.

The human health papers are more highly cited than the average paper. Using the ESI average citation rates for papers published by field as the benchmark, in 13 of the 17 fields in which the EPA human health papers were published, the ratio of actual to expected cites is greater than 1, indicating that the human health papers are more highly cited than the average papers in those fields.

Approximately one-half of the human health papers are published in very high impact journals. Four- hundred seventeen (417) of 839 papers were published in the top 10% of journals ranked by JCR Impact Factor, representing 49.7% of EPA s human health papers. Nearly half of the human health papers are published in the top 10% of journals ranked by JCR Immediacy Factor. Three-hundred sixty-two (362) of the 839 papers appear in the top 10% of journals, representing 43.2% of EPA s human health papers.

[1] Thomson s *Web of Science* provides access to current and retrospective multidisciplinary information from approximately 8,700 of the most prestigious, high impact research journals in the world. *Web of Science* also provides cited reference searching.

Seven of the human health papers qualify as hot papers. ESI establishes citation thresholds for hot papers, which are selected from the highly cited papers in different fields, but the time frame for citing and cited papers is much shorter papers must be cited within 2 years of publication and the citations must occur in a 2-month time period. Using the hot paper thresholds established by ESI as a benchmark, 7 hot papers, representing 0.83% of the human health papers, were identified in the analysis.

The author self-citation rate is below average. Four-hundred fifteen (415) of the 8,378 cites are author self-cites. This 4.95% author self-citation rate is below the accepted range of 10-30% author self-citation rate.

Highly Cited Human Health Publications

The 839 human health papers reviewed for this analysis covered 17 of the 22 ESI fields. The distribution of the papers among these 17 fields and the number of citations by field are presented in Table 1.

Table 1. Human Health Papers by ESI Fields

No. of Citations	ESI Field	No. of Human Health Papers	Average Cites/Paper
2,613	Environment/Ecology	266	10.18
2,453	Pharmacology & Toxicology	251	9.77
996	Biology & Biochemistry	97	10.27
601	Clinical Medicine	44	13.66
515	Molecular Biology & Genetics	24	21.21
372	Neuroscience & Behavior	53	7.02
290	Immunology	14	20.71
154	Chemistry	30	5.13
115	Engineering	27	4.26
109	Microbiology	9	12.11
66	Mathematics	9	7.33
57	Geosciences	2	28.50
18	Plant & Animal Science	5	3.60
15	Physics	3	5.00

No. of Citations	ESI Field	No. of Human Health Papers	Average Cites/Paper
2	Multidisciplinary	3	0.67
2	Economics & Business	1	2.00
0	Social Science, general	1	0.00
Total = 8,378		**Total = 839**	

There were 204 (24.3% of the papers analyzed) highly cited EPA human health papers in 13 of the 17 fields Environment/Ecology, Pharmacology & Toxicology, Biology & Biochemistry, Clinical Medicine, Molecular Biology & Genetics, Neuroscience & Behavior, Immunology, Chemistry, Engineering, Microbiology, Mathematics, Geosciences, and Plant & Animal Science when using the ESI criteria for the **top 10% of papers**. Table 2 shows the number of EPA papers in those 13 fields that met the **top 10% threshold in ESI**. Twenty-nine (3.5%) of the papers analyzed qualified as highly cited when using the ESI criteria for the **top 1% of papers**. These papers covered six fields Environment/Ecology, Pharmacology & Toxicology, Molecular Biology & Genetics, Clinical Medicine, Engineering, and Mathematics. Table 3 shows the 29 papers by field that met the **top 1% threshold in ESI**. There were two very highly cited EPA human health papers in two fields Clinical Medicine and Pharmacology & Toxicology. These two papers met the **top 0.1% threshold in ESI** (0.24% of the papers analyzed). One of these human health papers actually met the **top 0.01% threshold in ESI** (i.e., the paper by Ding and Kaminsky).

Table 2. Number of Highly Cited Human Health Papers by Field (top 10%)

Citations	ESI Field	No. of Papers	Average Cites/Paper	% of EPA Papers in Field
1,864	Environment/Ecology	92	20.26	34.59%
1,467	Pharmacology & Toxicology	49	29.94	19.52%
466	Clinical Medicine	15	31.07	34.09%
371	Molecular Biology & Genetics	2	185.50	8.33%
349	Biology & Biochemistry	10	34.90	10.31%

Citations	ESI Field	No. of Papers	Average Cites/Paper	% of EPA Papers in Field
127	Immunology	3	42.33	21.43%
100	Chemistry	4	25.00	13.33%
93	Neuroscience & Behavior	6	15.50	11.32%
91	Engineering	11	8.27	40.74%
80	Microbiology	4	20.00	44.44%
65	Mathematics	6	10.83	66.67%
39	Geosciences	1	39.00	50.00%
11	Plant & Animal Science	1	11.00	20.00%
Total = 204				

Table 3. Number of Highly Cited Human Health Papers by Field (top 1%)

Citations	ESI Field	No. of Papers	Average Cites/Paper	% of EPA Papers in Field
647	Environment/Ecology	15	43.13	5.64%
359	Pharmacology & Toxicology	5	71.80	1.99%
325	Molecular Biology & Genetics	1	325.00	4.17%
203	Clinical Medicine	3	67.67	6.82%
46	Engineering	4	11.50	14.81%
9	Mathematics	1	9.00	11.11%
Total = 29				

The citations for the highly cited papers in the top 1% are presented in Tables 4 through 9. The citations for the very highly cited papers (top 0.1%) are listed in Table 10.

Table 4. Highly Cited Human Health Papers in the Field of Environment/Ecology (top 1%)

No. of Cites	First Author	Paper
65	Eskenazi B	Exposures of children to organophosphate pesticides and their potential adverse health effects. *Environmental Health Perspectives* 1999;107(Suppl 3):409-419.
77	Landrigan PJ	Pesticides and inner-city children: exposures, risks, and prevention. *Environmental Health Perspectives* 1999;107(Suppl 3):431-437.
93	Pope CN	Organophosphorus pesticides: do they all have the same mechanism of toxicity? *Journal of Toxicology and Environmental Health-Part B-Critical Reviews* 1999;2(2):161-181.
81	Schwartz J	Fine particles are more strongly associated than coarse particles with acute respiratory health effects in schoolchildren. *Epidemiology* 2000;11(1):6-10.
102	Laden F	Association of fine particulate matter from different sources with daily mortality in six US cities. *Environmental Health Perspectives* 2000;108(10):941-947.
115	Rice D	Critical periods of vulnerability for the developing nervous system: evidence from humans and animal models. *Environmental Health Perspectives* 2000;108(Suppl 3):511-533.
24	Whyatt RM	Residential pesticide use during pregnancy among a cohort of urban minority women. *Environmental Health Perspectives* 2002;110(5):507-514.
11	Glenn BS	The longitudinal association of lead with blood pressure. *Epidemiology* 2003;14(1):30-36.
13	Curl CL	Organophosphorus pesticide exposure of urban and suburban preschool children with organic and conventional diets. *Environmental Health Perspectives* 2003;111(3):377-382.
22	Birnbaum LS	Cancer and developmental exposure to endocrine disruptors. *Environmental Health Perspectives* 2003;111(4):389-394.
24	Perera FP	Effects of transplacental exposure to environmental pollutants on birth outcomes in a multiethnic population. *Environmental Health Perspectives* 2003;111(2):201-205.
4	DeMarini DM	Bioassay-directed fractionation and Salmonella mutagenicity of automobile and forklift diesel exhaust particles. *Environmental Health Perspectives* 2004;112(8):814-819.

No. of Cites	First Author	Paper
4	Singh P	Sample characterization of automobile and forklift diesel exhaust particles and comparative pulmonary toxicity in mice. *Environmental Health Perspectives* 2004;112(8):820-825.
5	Buck GM	Prospective pregnancy study designs for assessing reproductive and developmental toxicants. *Environmental Health Perspectives* 2004;112(1):79-86.
7	Ulrich RG	Overview of an interlaboratory collaboration on evaluating the effects of model hepatotoxicants on hepatic gene expression. *Environmental Health Perspectives* 2004;112(4):423-427.

Table 5. Highly Cited Human Health Papers in the Field of Pharmacology & Toxicology (top 1%)

No. of Cites	First Author	Paper
108	Laws SC	Estrogenic activity of octylphenol, nonylphenol, bisphenol A and methoxychlor in rats. *Toxicological Sciences* 2000;54(1):154-167.
114	Styblo M	Comparative toxicity of trivalent and pentavalent inorganic and methylated arsenicals in rat and human cells. *Archives of Toxicology* 2000;74(6):289-299.
70	Thomas DJ	The cellular metabolism and systemic toxicity of arsenic. *Toxicology and Applied Pharmacology* 2001;176(2):127-144.
62	Ding XX	Human extrahepatic cytochromes P450: function in xenobiotic metabolism and tissue-selective chemical toxicity in the respiratory and gastrointestinal tracts. *Annual Review of Pharmacology and Toxicology* 2003;43:149-173.
5	Stoker TE	Assessment of DE-71, a commercial polybrominated diphenyl ether (PBDE) mixture, in the EDSP male and female pubertal protocols. *Toxicological Sciences* 2004;78(1):144-155.

Table 6. Highly Cited Human Health Papers in the Field of Molecular Biology & Genetics (top 1%)

No. of Cites	First Author	Paper
325	Arbour NC	TLR4 mutations are associated with endotoxin hyporesponsiveness in humans. *Nature Genetics* 2000;25(2):187-191.

Table 7. Highly Cited Human Health Papers in the Field of Clinical Medicine (top 1%)

No. of Cites	First Author	Paper
43	Wang XB	Maternal cigarette smoking, metabolic gene polymorphism, and infant birth weight. *JAMA Journal of the American Medical Association* 2002;287(2):195-202.
71	McConnell R	Asthma in exercising children exposed to ozone: a cohort study. *Lancet* 2002;359(9304):386-391.
89	Canfield RL	Intellectual impairment in children with blood lead concentrations below 10 g per deciliter. *New England Journal of Medicine* 2003;348(16): 1517-1526.

Table 8. Highly Cited Human Health Papers in the Field of Engineering (top 1%)

No. of Cites	First Author	Paper
21	Vette AF	Characterization of indoor-outdoor aerosol concentration relationships during the Fresno PM exposure studies. *Aerosol Science and Technology* 2001;34(1):118-126.
8	Landis MS	Atmospheric mercury in the Lake Michigan basin: influence of the Chicago/Gary urban area. *Environmental Science & Technology* 2002;36(21):4508-4517.
13	Miles AM	Comparison of trihalomethanes in tap water and blood. *Environmental Science & Technology* 2002;36(8):1692-1698.
4	Sexton K	Comparison of personal, indoor, and outdoor exposures to hazardous air pollutants in three urban communities. *Environmental Science & Technology* 2004;38(2):423-430.

Table 9. Highly Cited Human Health Papers in the Field of Mathematics (top 1%)

No. of Cites	First Author	Paper
9	Hattis D	Differences in pharmacokinetics between children and adults - II. Children s variability in drug elimination half-lives and in some parameters needed for physiologically-based pharmacokinetic modeling. *Risk Analysis* 2003;23(1):117-142.

Table 10. Very Highly Cited Human Health Papers (Top 0.1%)

Field	No. of Cites	First Author	Paper
Clinical Medicine	89	Canfield RL	Intellectual impairment in children with blood lead concentrations below 10 g per deciliter. *New England Journal of Medicine* 2003;348(16):1517-1526.
Pharmacology & Toxicology	62	Ding XX[2]	Human extrahepatic cytochromes P450: function in xenobiotic metabolism and tissue-selective chemical toxicity in the respiratory and gastrointestinal tracts. *Annual Review of Pharmacology and Toxicology* 2003;43:149-173.

Ratio of Actual Cites to Expected Citation Rates

The expected citation rate is the average number of cites that a paper published in the same journal in the same year and of the same document type (article, review, editorial, etc.) has received from the year of publication to the present. Using the ESI average citation rates for papers published by field as the benchmark, in 13 of the 17 fields in which the EPA human health papers were published, the ratio of actual to expected cites is greater than 1, indicating that the EPA papers are more highly cited than the average papers in those fields (see Table 11).

Table 11. Ratio of Average Cites to Expected Cites for Human Health Papers by Field

ESI Field	Total Cites	Expected Cite Rate	Ratio
Environment/Ecology	2,613	1,135.67	2.30
Pharmacology & Toxicology	2,453	1,431.90	1.71
Biology & Biochemistry	996	985.86	1.01
Clinical Medicine	601	196.23	3.06
Molecular Biology & Genetics	515	349.93	1.47
Neuroscience & Behavior	372	408.35	0.91

[2] This paper by Ding and Kaminsky also met the **top 0.01% threshold in ESI**, which is the highest threshold.

ESI Field	Total Cites	Expected Cite Rate	Ratio
Immunology	290	177.89	1.63
Chemistry	154	158.15	0.97
Engineering	115	41.49	2.77
Microbiology	109	64.17	1.70
Mathematics	66	13.11	5.03
Geosciences	57	17.26	3.30
Plant & Animal Science	18	8.68	2.07
Physics	15	17.88	0.84
Multidisciplinary	2	2.55	0.78
Economics & Business	2	1.41	1.42
Social Science, general	1	0.59	1.69

JCR Benchmarks

The Impact Factor is a well known metric in citation analysis. It is a measure of the frequency with which the *average article* in a journal has been cited in a particular year. The Impact Factor helps evaluate a journal s relative importance, especially when compared to others in the same field. The Impact Factor is calculated by dividing the number of citations in the current year to articles published in the 2 previous years by the total number of articles published in the 2 previous years.

Table 12 indicates the number of human health papers published in the top 10% of journals, based on the JCR Impact Factor. Four hundred-seventeen (417) of 839 papers were published in the top 10% of journals, representing 49.7% of EPA s human health papers.

Table 12. Human Health Papers in Top 10% of Journals by JCR Impact Factor

EPA Human Health Papers in that Journal	Journal	Impact Factor (IF)	JCR IF Rank
94	Environmental Health Perspectives	3.408	538
90	Toxicological Sciences	3.067	648

EPA Human Health Papers in that Journal	Journal	Impact Factor (IF)	JCR IF Rank
44	Toxicology and Applied Pharmacology	2.851	750
11	American Journal of Physiology Lung Cellular and Molecular Physiology	3.735	435
10	American Journal of Respiratory and Critical Care Medicine	8.876	100
10	Environmental Science & Technology	3.592	487
10	Chemical Research in Toxicology	3.332	555
8	American Journal of Epidemiology	4.486	310
8	Epidemiology	4.220	350
8	Mutation Research Fundamental and Molecular Mechanisms of Mutagenesis	3.433	530
7	Carcinogenesis	4.663	292
6	Pharmacogenetics	5.851	207
6	Pediatrics	3.781	427
5	Journal of Biological Chemistry	6.482	179
5	Biology of Reproduction	3.646	464
5	Journal of Applied Physiology	3.027	665
4	Cancer Epidemiology Biomarkers & Prevention	4.720	288
4	Journal of Infectious Diseases	4.481	311
3	Lancet	18.316	28
3	Proceedings of the National Academy of Sciences of the United States of America	10.272	81
3	Journal of Neuroscience	8.306	114
3	Journal of Immunology	6.702	167
3	Mutation Research Reviews in Mutation Research	5.783	210
3	Applied and Environmental Microbiology	3.820	418

EPA Human Health Papers in that Journal	Journal	Impact Factor (IF)	JCR IF Rank
3	Drug Metabolism and Disposition	3.652	462
3	Magnetic Resonance in Medicine	3.313	569
3	Journal of Pediatrics	2.913	722
3	Biochemical and Biophysical Research Communications	2.836	757
2	New England Journal of Medicine	34.833	5
2	JAMA Journal of the American Medical Association	21.455	22
2	American Journal of Clinical Nutrition	5.692	215
2	Infection and Immunity	3.875	403
2	Chest	3.264	585
2	Journal of Geophysical Research	2.992	682
1	Nature Genetics	26.494	18
1	Annual Review of Pharmacology and Toxicology	21.786	21
1	Journal of the National Cancer Institute	13.844	48
1	American Journal of Human Genetics	11.602	68
1	Annual Review of Medicine Selected Topics in the Clinical Sciences	11.381	71
1	Circulation Research	10.117	84
1	Genome Research	9.635	90
1	Cancer Research	8.649	105
1	Journal of the American Society of Nephrology	7.499	137
1	FASEB Journal	7.172	149
1	Cell Death and Differentiation	7.008	154
1	Journal of Allergy and Clinical Immunology	6.831	162
1	Arteriosclerosis Thrombosis and Vascular Biology	6.791	164
1	Neuroimage	6.192	186

EPA Human Health Papers in that Journal	Journal	Impact Factor (IF)	JCR IF Rank
1	Free Radical Biology and Medicine	5.063	260
1	Journal of Medicinal Chemistry	4.820	278
1	Drug Metabolism Reviews	4.537	302
1	Thorax	4.188	356
1	Investigative Ophthalmology & Visual Science	4.148	361
1	American Journal of Respiratory Cell and Molecular Biology	4.105	380
1	American Journal of Physiology Cell Physiology	4.103	364
1	Cancer	4.017	379
1	Neuropharmacology	3.801	421
1	Bipolar Disorders	3.658	460
1	Neuroscience	3.601	484
1	Glycobiology	3.490	518
1	Mental Retardation and Development Disabilities Research Reviews	3.479	522
1	American Journal of Public Health	3.363	551
1	Journal of Nutrition	3.321	563
1	Journal of Analytical Atomic Spectrometry	3.200	605
1	Journal of Computational Chemistry	3.186	607
1	Human Reproduction	3.125	630
1	Journal of Neurology Neurosurgery and Psychiatry	3.035	662
1	European Respiratory Journal	2.999	679
1	Biochemical Pharmacology	2.993	680
1	Journal of the American College of Nutrition	2.979	686

EPA Human Health Papers in that Journal	Journal	Impact Factor (IF)	JCR IF Rank
1	Journal of Chemical Physics	2.950	703
1	Journal of Chromatography A	2.922	719
1	Clinical Immunology	2.915	721
1	Gene	2.754	795
Total = 417			

Immediacy Index

The journal Immediacy Index is a measure of how quickly the *average article* in a journal is cited. It indicates how often articles published in a journal are cited within the year they are published. The Immediacy Index is calculated by dividing the number of citations to articles published in a given year by the number of articles published in that year.

Table 13 indicates the number of EPA human health papers published in the top 10% of journals, based on the JCR Immediacy Index. Three-hundred sixty-two (362) of the 839 papers appear in the top 10% of journals, representing 43.2% of EPA s human health papers.

Table 13. Human Health Papers in Top 10% of Journals by JCR Immediacy Index

EPA Human Health Papers in that Journal	Journal	Immediacy Index (II)	JCR II Rank
94	Environmental Health Perspectives	0.869	304
90	Toxicological Sciences	0.528	685
11	American Journal of Physiology Lung Cellular and Molecular Physiology	0.654	496
10	American Joumal of Respiratory and Critical Care Medicine	2.461	56
10	Chemical Research in Toxicology	0.497	765
8	Epidemiology	0.938	264
8	American Journal of Epidemiology	0.908	281

EPA Human Health Papers in that Journal	Journal	Immediacy Index (II)	JCR II Rank
8	Mutation Research Fundamental and Molecular Mechanisms of Mutagenesis	0.721	420
8	Toxicologic Pathology	0.487	792
7	Carcinogenesis	0.775	379
6	Pharmacogenetics	0.921	271
6	Pediatrics	0.633	524
5	Journal of Biological Chemistry	1.231	160
5	Biology of Reproduction	0.735	409
5	American Journal of Industrial Medicine	0.616	552
4	Journal of Infectious Diseases	0.889	287
3	Lancet	5.826	10
3	Proceedings of the National Academy of Sciences of the United States of America	1.935	245
3	Journal of Allergy and Clinical Immunology	1.465	123
3	Journal of Neuroscience	1.189	176
3	Journal of Immunology	0.988	239
3	Drug Metabolism and Disposition	0.791	368
3	Annals of Occupational Hygiene	0.661	487
3	Journal of Pediatrics	0.631	528
3	Magnetic Resonance in Medicine	0.543	651
2	New England Journal of Medicine	11.719	2
2	JAMA Journal of the American Medical Association	6.048	9
2	American Journal of Clinical Nutrition	1.005	228
2	Journal of Geophysical Research	0.827	334
2	Infection and Immunity	0.624	544
2	Archives of Biochemistry and Biophysics	0.559	623
2	Chest	0.500	745

EPA Human Health Papers in that Journal	Journal	Immediacy Index (II)	JCR II Rank
1	Nature Genetics	8.631	4
1	Annual Review of Pharmacology and Toxicology	4.520	20
1	Journal of the National Cancer Institute	3.293	32
1	Annual Review of Medicine Selected Topics in the Clinical Sciences	2.871	43
1	American Journal of Human Genetics	2.603	53
1	Genome Research	1.626	110
1	Circulation Research	1.625	111
1	Cell Death and Differentiation	1.548	118
1	FASEB Journal	1.247	154
1	Thorax	1.237	158
1	Arteriosclerosis Thrombosis and Vascular Biology	1.220	163
1	American Journal of Tropical Medicine and Hygiene	1.024	216
1	Cancer Research	0.935	268
1	Glycobiology	0.883	296
1	Journal of the American Society of Nephrology	0.828	332
1	Journal of Medicinal Chemistry	0.817	342
1	Cancer	0.796	361
1	Mental Retardation and Developmental Disabilities Research Reviews	0.788	371
1	Bipolar Disorders	0.770	380
1	Birth Defects Research Part B Development and Reproductive Toxicology	0.762	390
1	American Journal of Physiology Cell Physiology	0.719	422
1	Free Radical Biology and Medicine	0.712	432
1	American Journal of Public Health	0.682	465
1	Journal of Chemical Physics	0.661	487

EPA Human Health Papers in that Journal	Journal	Immediacy Index (II)	JCR II Rank
1	Journal of Nutrition	0.647	507
1	Investigative Ophthalmology & Visual Science	0.644	511
1	American Journal of Respiratory Cell and Molecular Biology	0.623	546
1	Infection Control and Hospital Epidemiology	0.590	586
1	Cell Stress and Chaperones	0.562	618
1	Human Reproduction	0.560	621
1	Drug Metabolism Reviews	0.556	628
1	Neuropharmacology	0.525	689
1	Journal of Analytical Atomic Spectrometry	0.523	694
1	Neuroscience	0.521	706
1	Journal of Chromatography A	0.517	715
1	Journal of Computational Chemistry	0.512	728
Total = 362			

Hot Papers

ESI establishes citation thresholds for hot papers, which are selected from the highly cited papers in different fields, but the time frame for citing and cited papers is much shorter papers must be cited within 2 years of publication and the citations must occur in a 2-month time period. Papers are assigned to 2-month periods and thresholds are set for each period and field to select 0.1% of papers. There were no hot papers identified for the current 2-month period (i.e., February-March 2005), but there were a number of hot papers identified from previous periods.

Using the hot paper thresholds established by ESI as a benchmark, 7 hot papers, representing 0.83% of the human health papers, were identified in five fields Environment/Ecology, Pharmacology & Toxicology, Engineering, Chemistry, and Clinical Medicine. The hot papers are listed in Table 14.

Table 14. Hot Papers Identified Using ESI Thresholds

Field	ESI Hot Papers Threshold	No. of Cites in 2-Month Period	Paper
Environment/ Ecology	8	8 cites in April-May 2004	Perera FP, Rauh V, Tsai WY, et al. Effects of transplacental exposure to environmental pollutants on birth outcomes in a multiethnic population. *Environmental Health Perspectives* 2003;111(2):201-205.
		9 cites in September-October 2002	Laden F, Neas LM, Dockery DW, et al. Association of fine particulate matter from different sources with daily mortality in six US cities. *Environmental Health Perspectives* 2000;108(10):941-947.
Pharmacology & Toxicology	8	8 cites in July-August 2002	Styblo M, Del Razo LM, Vega L, et al. Comparative toxicity of trivalent and pentavalent inorganic and methylated arsenicals in rat and human cells. *Archives of Toxicology* 2000;74(6):289-299.
		9 cites in September-October 2004	Ding XX, Kaminsky LS. Human extrahepatic cytochromes P450: function in xenobiotic metabolism and tissue-selective chemical toxicity in the respiratory and gastrointestinal tracts. *Annual Review of Pharmacology and Toxicology* 2003;43:149-173.
Engineering	4	4 cites in November-December 2003	Miles AM, Singer PC, Ashley DL, et al. Comparison of trihalomethanes in tap water and blood. *Environmental Science & Technology* 2002;36(8): 1692-1698.
Chemistry	8	11 cites in August-September 2004	Nesnow S, Roop BC, Lambert G, et al. DNA damage induced by methylated trivalent arsenicals is mediated by reactive oxygen species. *Chemical Research in Toxicology* 2002;15(12):1627-1634.
Clinical Medicine	10	13 cites in November-December 2004	Canfield RL, Henderson CR, Cory-Slechta DA, et al. Intellectual impairment in children with blood lead concentrations below 10 g per deciliter. *New England Journal of Medicine* 2003;348(16):1517-1526.

Author Self-Citation

Self-citations are journal article references to articles from that same author (i.e., the first author). Because higher author self-citation rates can inflate the number of citations, the author self-citation rate was calculated for the human health papers. Of the 8,378 total cites, 415 are author self-cites a 4.95%

author self-citation rate. Garfield and Sher[3] found that authors working in research-based disciplines tend to cite themselves on the average of 20% of the time. MacRoberts and MacRoberts[4] claim that approximately 10% to 30% of all the citations listed fall into the category of author self-citation. Therefore, the 4.95% self-cite rate for the human health papers is below the range for author self-citation.

[3] Garfield E, Sher IH. New factors in the evaluation of scientific literature through citation indexing. *American Documentation* 1963;18(July):195-201.

[4] MacRoberts MH, MacRoberts BR. Problems of citation analysis: a critical review. *Journal of the American Society of Information Science* 1989;40(5):342-349.