

BRAND REPORT

FOR THE 6 MONTH PERIOD ENDED DECEMBER 2018



No attempt has been made to rank the information contained in this report in order of importance, since BPA Worldwide believes this is a judgment which must be made by the user of the report.

American Chemical Society 1155 16th Street, NW Washington, DC 20036 Tel. No.: (202) 872-4600 www.cen.acs.org **C&EN (CHEMICAL & ENGINEERING NEWS)** is a news magazine serving the industrial and specialty chemical, life sciences, and laboratory industries. For nearly 95 years, C&EN has provided scientists, engineers and R&D professionals around the globe with timely news coverage including the latest technologies, tools and trends that serve the chemical enterprise. C&EN's audience work in industrial, academic and government laboratories driving research and development. Published by the American Chemical Society, C&EN's integrated network is delivered in print, digitally and online.

BRAND REPORT PURPOSE

The Brand Report provides a deeper understanding and identification of all audited touch points with customers that have interest in the brand. It is designed to present analysis of all communication channels, including a brand's unique users within each channel of, but not across, multiple media platforms. This non-integrated report contains data for each separate media channel as indicated in the Executive Summary. No attempt has been made to identify or eliminate duplication that may exist across media channels.

CHANNELS





EXECUTIVE SUMMARY

Below are the average contacts per occurrence, including frequency per period reported.

	Non-Paid	Paid	Average
CHEMICAL & ENGINEERING NEWS (23 issues in the period)	12,290	87,940	100,230
a. Print	8,340	43,906	52,246
b. Digital	3,950	44,034	47,984
1. Requested	5	221	226
2. Non-Requested Digital Membership Benefit	3,945	43,813	47,758
CHEMICAL & ENGINEERING NEWS WEBSITE (Monthly Users with 626,114 average Pageviews)	315,058	-	315,058

FIELD SERVED CHEMICAL & ENGINEERING NEWS

serves manufacturers including pharmaceutical, biotech/life sciences, industrial chemical, environmental/water, agricultural, food/beverage/flavors, petrochemical and others, independent consulting firms, independent laboratories, academic institutions, engineering/construction firms, government, hospital/clinics, public utilities/transportation, retail/wholesale trade and others allied to the field.

DEFINITION OF RECIPIENT QUALIFICATION

Qualified recipients are: Individuals in Chemistry/Science (Chief Chemist/Scientist, Research Scientist/Chemist, Senior Scientist/Chemist, Principal Scientist/Chemist, Graduate Student, Postdoctoral/Fellow Research, Chemical Technician), Executive Management (CEO, President, VP, Mgr Director, Owner, Partner), R & D Management (VP, Director, Manager of R & D, Research, Development, Laboratory Director/Head, Technical Director, Manager and Specialist), Engineering and Engineering Management (Chemical Engineer, Chief, Engineer, Plant/Production Engineer, Design Engineer, Director of Engineering, Engineering Mgr.), Health and Safety, Process/Quality Control, Production/Operations Management (Health and Safety Regulatory Affairs Manager, Process and/or Quality Control Manager, Quality Assurance Manager, Area Mgr, Dir of Production, Dir of Operations, Plant Mgr, Unit Mgr, Supervisor/Project Lead/Foreman, Area Manager, Group/Section Leader, Program Manager, Tech Supervisor), Sales/Marketing/Business Development/Purchasing (Acct. Exec., Bus. Dev Mgr., Dir of Sales, Dir of Marketing, Purchasing Manager, Buyer, Procurement Manager), Consulting/Advising (Consultant, Patent Attorney, Advisor, Association Expert), Education Staff/Management (University/College Professor, Teacher, Teaching Assistant, High School Teacher, University/College Administrator, Secondary Principal), Members of the American Chemical Society and others within the field served.

AVERAGE NON-QUALIFIED CIRCULATION

Non-Qualified Not Included Elsewhere	Copies
Other Paid Circulation	-
Advertiser and Agency	-
Allocated for Trade Shows and Conventions	-
All Other	-
TOTAL	-

1. AVERAGE QUALIFIED CIRCULATION BREAKOUT FOR THE PERIOD **Total Qualified Oualified Non-Paid Oualified Paid** Qualified Circulation Copies Copies Percent Copies Percent Percent Individual 250 0.2 13 237 0.2 Sponsored Individually Addressed *Membership Benefit 99,980 99.8 12,277 12.3 87,703 87.5 Multi-Copy Same Addressee Single Copy Sales

12,290

12.3

Qualified

87,940

87.7

Total

*See Additional Data

TOTAL QUALIFIED CIRCULATION

100,230

100.0

Qualified

2. QUALIFIED CIRCULATION BY ISSUES FOR PERIOD

2018 Issue	Print	Digital	Non-Paid	Paid	Qualified
July 2	52,841	47,781	13,015	87,607	100,622
July 9	52,693	47,635	12,888	87,440	100,328
July 16	52,679	47,723	12,715	87,687	100,402
July 23	52,726	47,088	12,036	87,778	99,814
July 30	52,743	47,419	11,902	88,260	100,162
August 6	52,697	47,516	11,867	88,346	100,213
August 20	52,658	47,450	11,669	88,439	100,108
August 27	52,598	47,497	11,665	88,430	100,095
September 3	52,503	47,670	11,643	88,530	100,173
September 10	52,379	47,656	11,632	88,403	100,035
September 17	52,341	47,738	11,619	88,460	100,079
September 24	52,361	47,739	11,639	88,461	100,100
October 1	52,282	47,786	11,752	88,316	100,068
October 8	52,182	48,035	12,070	88,147	100,217
October 15	52,080	48,305	12,405	87,980	100,385
October 22	52,037	48,519	12,649	87,907	100,556
October 29	51,878	48,359	12,617	87,620	100,237
November 5	51,736	48,336	12,644	87,428	100,072
November 12	51,744	48,571	12,692	87,623	100,315
November 19	51,714	48,634	12,681	87,667	100,348
*November 26	51,641	48,671	12,736	87,576	100,312
December 3	51,655	48,806	13,030	87,431	100,461
December 17	51,502	48,692	13,112	87,082	100,194
*Analyzed Issue					

3a. BUSINESS/OCCUPATION BREAKOUT OF QUALIFIED CIRCULATION FOR ISSUE OF NOVEMBER 26, 2018 This issue is 0.1% or 85 copies above the average of the other 22 issues reported in Paragraph 2.

Business and Industry	Total Qualified	Percent of Total	Qualified Non-Paid	Qualified Paid
Academic Institutions	19,688	19.6	1,945	17,743
Engineering/Construction Firms	321	0.3	6	315
Government/Public Utility/Transportation	1,912	1.9	49	1,863
Hospitals/Clinics	211	0.2	5	206
Independent Consulting Firms	1,218	1.2	50	1,168
Independent Laboratories	875	0.9	22	853
Manufacturers	8,689	8.7	150	8,539
Wholesale/Retail Trade	129	0.1	3	126
American Chemical Society Members not elsewhere classified	67,196	67.0	10,505	56,691
Others Allied to the Field	73	0.1	1	72
TOTAL QUALIFIED CIRCULATION	100,312	100.0	12,736	87,576
PERCENT	100.0		12.7	87.3

Classification by Title	Total Qualified	Percent of Total	Qualified Non-Paid	Qualified Paid
Executive Management (Note 1)	1,337	1.3	50	1,287
Health and Safety, Process/Quality Control, Production/Operations Management (Note 2)	1,300	1.3	35	1,265
Engineering and Engineering Management (Note 3)	858	0.8	14	844
R & D Management (Note 4)	2,111	2.1	31	2,080
Chemistry/Science (Note 5)	14,416	14.4	265	14,151
Sales/Marketing/Business Development/Purchasing (Note 6)	500	0.5	9	491
Consulting/Advising (Note 7)	878	0.9	42	836
Education Staff/Management (Note 8)	11,027	11.0	1,648	9,379
American Chemical Society Members not elsewhere classified	67,810	67.6	10,641	57,169
Others Allied to the Field	75	0.1	1	74
TOTAL QUALIFIED CIRCULATION	100,312	100.0	12,736	87,576
PERCENT	100.0		12.7	87.3

Note 1 - CEO, President, VP, Mgr Director, Owners, Partners, etc.

Note 2 - Health and Safety Regulatory Affairs Manager, Process and/or Quality Control Manager, Quality Assurance Manager, Area Mgr, Dir of Production, Dir of Operations,

Plant Mgr, Unit Mgr, Supervisor/Project Lead/Foreman, Area Manager, Group/Section Leader, Program Manager, Tech Supervisor, etc. Note 3 - Chemical Engineer, Chief, Engineer, Plant/Production Engineer, Design Engineer, Director of Engineering, Engineering Mgr.

Note 4 - VP, Director, Manager of R & D, Research, Development, Laboratory Director/Head, Technical Director, Manager and Specialist

Note 5 - Chief Chemist/Scientist, Research Scientist/Chemist, Senior Scientist/Chemist, Principal Scientist/Chemist, Graduate Student, Postdoctoral/Fellow Research, Chemical Technician

Note 6 - Acct. Exec., Bus. Dev Mgr., Dir of Sales, Dir of Marketing, Purchasing Manager, Buyer, Procurement Manager

Note 7 - Consultant, Patent Attorney, Advisor, Association Expert

Note 8 - University/College Professor, Teacher, Teaching Assistant, High School Teacher, University/College Administrator, Secondary Principal

3b. QUALIFICATION SOURCE BREAKOUT OF QUALIFIED CIRCULATION FOR ISSUE OF NOVEMBER 26, 2018

	Qualified Within								
Qualification Source	1 Year	2 Years	3+ Years	Print	Digital	Qualified Non-Paid	Qualified Paid	Total Qualified	Percent
I. Direct Request:	149	103	68	38	282	18	302	320	0.3
II. Request from recipient's company:	-	-	-	-	-	-	-	-	-
III. Membership Benefit:	76,150	21,436	2,406	51,603	48,389	12,718	87,274	99,992	99.7
IV. Communication from recipient or recipient's company (other than request):	-	-	-	-	-	-	-	-	-
V. Sources other than above, including: Association rosters and directories; Business directories; Manufacturer's, distributor's and wholesaler's lists; and Other sources:	-	-	-	-	-	-	-	-	-
VI. Single Copy Sales:	-	-	-	-	-	-	-	-	-
TOTAL QUALIFIED CIRCULATION	76,299	21,539	2,474	51,641	48,671	12,736	87,576	100,312	100.0
PERCENT	76.1	21.5	2.4	51.5	48.5	12.7	87.3	100.0	

AVERAGE ANNUAL AUDITED QUALIFIED CIRCULATION AND CURRENT UNAUDITED BRAND REPORTS

	Audited Data	Audited Data	Audited Data	Audited Data	Audited Data	Circulation Claim
6-Month Period Ended:	January – June 2016	July - December 2016	January – June 2017	July - December 2017	January – June 2018	July - December 2018*
Audit Average Qualified:	106,495	107,909	105,086	105,084	98,036	100,230
fied Non-Paid:	14,069	12,818	12,919	12,909	12,784	12,290
nt:	8,346	8,440	8,305	8,295	8,193	8,340
ital:	5,723	4,378	4,614	4,614	4,591	3,950
fied Paid:	92,426	95,091	92,167	92,175	85,252	87,940
nt:	50,870	52,100	48,287	48,287	43,236	43,906
ital:	41,556	42,991	43,880	43,888	42,016	44,034
Expire Copies included in Qualified Circulation:	**NC	**NC	**NC	**NC	**NC	**NC
age Annual Order Price:	\$53.04	\$52.85	\$55.08	\$54.95	\$62.33	\$62.33
Expire Copies included in Qualified Circulation:	**NC	**NC	**NC	**NC	**NC	

^{*}NOTE: July - December 2018 data is unaudited. With each successive period, new data will be added until six 6-month periods are displayed.

^{**}NC = None Claimed.

GEOGRAPHICAL BREAKOUT OF	OUALIFIED CIRCULATION FOR ISSUE OF NOVEMBER	26, 2018*

					Total							Total	
State	Print	Digital	Non-Paid	Paid	Qualified	Percent	State	Print	Digital	Non-Paid	Paid	Qualified	Percent
Maine	174	97	53	218	271		Kentucky	408	215	91	532	623	
New Hampshire	251	151	74	328	402		Tennessee	848	568	211	1,205	1,416	
Vermont	104	70	31	143	174		Alabama	393	299	104	588	692	
Massachusetts	2,851	2,450	447	4,854	5,301		Mississippi	211	181	43	349	392	
Rhode Island	203	150	50	303	353		EAST SO. CENTRAL	1,860	1,263	449	2,674	3,123	3.1
Connecticut	1,095	706	250	1,551	1,801		Arkansas	205	151	48	308	356	
NEW ENGLAND	4,678	3,624	905	7,397	8,302	8.3	Louisiana	433	355	99	689	788	
New York	2,701	1,755	774	3,682	4,456		Oklahoma	330	229	93	466	559	
New Jersey	2,903	1,441	748	3,596	4,344		Texas	2,649	1,892	609	3,932	4,541	
Pennsylvania	3,393	1,937	785	4,545	5,330		WEST SO. CENTRAL	3,617	2,627	849	5,395	6,244	6.2
MIDDLE ATLANTIC	8,997	5,133	2,307	11,823	14,130	14.1	Montana	104	85	27	162	189	
Ohio	2,180	1,376	549	3,007	3,556		Idaho	126	92	35	183	218	
Indiana	1,116	796	213	1,699	1,912		Wyoming	72	35	17	90	107	
Illinois	2,266	1,445	487	3,224	3,711		Colorado	879	715	258	1,336	1,594	
Michigan	1,609	1,038	383	2,264	2,647		New Mexico	366	240	116	490	606	
Wisconsin	922	472	174	1,220	1,394		Arizona	470	339	195	614	809	
EAST NO. CENTRAL	8,093	5,127	1,806	11,414	13,220	13.2	Utah	300	215	61	454	515	
Minnesota	887	672	190	1,369	1,559		Nevada	163	127	71	219	290	
Iowa	393	322	75	640	715		MOUNTAIN	2,480	1,848	780	3,548	4,328	4.3
Missouri	905	599	187	1,317	1,504		Alaska	37	39	8	68	76	
North Dakota	80	51	15	116	131		Washington	968	660	250	1,378	1,628	
South Dakota	83	51	20	114	134		Oregon	506	381	125	762	887	
Nebraska	191	139	36	294	330		California	5,640	3,999	1,209	8,430	9,639	
Kansas	338	243	78	503	581		Hawaii	98	64	27	135	162	
WEST NO. CENTRAL	2,877	2,077	601	4,353	4,954	4.9	PACIFIC	7,249	5,143	1,619	10,773	12,392	12.4
Delaware	598	321	176	743	919		UNITED STATES	48,449	32,539	11,727	69,261	80,988	80.7
Maryland	1,569	965	395	2,139	2,534		U.S. Territories	101	155	18	238	256	
Washington, DC	199	171	45	325	370		Canada	1,011	971	176	1,806	1,982	
Virginia	1,308	927	372	1,863	2,235		Mexico	59	188	5	242	247	
West Virginia	195	125	69	251	320		Other International	2,019	14,813	807	16,025	16,832	
North Carolina	1,600	1,074	385	2,289	2,674		APO/FPO	2	5	3	4	7	
South Carolina	611	403	158	856	1,014								
Georgia	1,053	752	237	1,568	1,805		TOTAL QUALIFIED	51,641	48.671	12.736	87.576	100.312	100.0
Florida	1,465	959	574	1,850	2,424		CIRCULATION	31,041	40,011	12,130	01,010	100,312	T00.0
SOUTH ATLANTIC	8,598	5,697	2,411	11,884	14,295	14.2							

CECCDADUICAL	DDEAKOUT OF	OUALIEIED CIDCUI	ATION FOR ISSUE O	F NOVEMBER 26. 2018*
GEUGRAPHICAL	. BREAKUUI UF	OUALIFIED CIRCUL	ATION FOR ISSUE O	IF NUVEWBER 20. 2018^

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Region/Country ASIA	Print	Digital	Non-Paid	Paid	Qualified	Percent	Region/Country	Print -	Digital 13	Non-Paid	Paid 13	Qualified	Percent
Armenia	_	1		1	1		Luxembourg		13		13	13	
Bangladesh	-	10	-	10	10		Macedonia	-			7	7	
China	25	1.902	344	1.583	1.927		Malta	1	6	-			
Georgia	-	1,902	-	1,383	1,927		Moldova	-	1	1	-	1	
Hong Kong - SAR	21	124	5	140	145		Netherlands	65	239	13	291	304	
India	52	885	39	898	937		Norway	20	76	4	92	96	
Indonesia	1	29	-	30	30		Poland	19	75	1	93	94	
Japan	573	2,767	58	3.282	3.340		Portugal	6	49	2	53	55	
Kazakhstan	-	2,707	-	5,262	5,540		Romania	1	58	-	59	59	
Korea, Republic Of	74	491	8	557	565		Russian Federation	4	97	2	99	101	
Macao	-	3	1	2	3		Serbia	-	12	-	12	12	
Malaysia	8	174	4	178	182		Slovakia	-	16	-	16	16	
Myanmar	-	3	-	3	3		Slovenia	2	21	2	21	23	
Nepal		1		1	1		Spain	54	404	5	453	458	
Pakistan	1	34	-	35	35		Sweden	46	313	15	344	359	
	2	28	3	27	30		Switzerland	145	535	20	660	680	
Philippines	18	153	1	170	171		Turkey	7	68	-	75	75	
Singapore Sri Lanka	4	22	1	25	26		Ukraine	-	10	-	10	10	
Sri Lanka		283	10		324				1,269				
Taiwan	41			314			United Kingdom	115		36	1,348	1,384	7.0
Thailand Vietnam	6	77 3	3	80 6	83 6		Subtotal	1,013	5,986	200	6,799	6,999	7.0
						7.0	AFRICA						
Subtotal	829	7,007	477	7,359	7,836	7.8	Algeria	-	2	-	2	2	
MIDDLE EAST	0	1		0	•		Botswana	-	4	-	4	4	
Bahrain	2	4	-	6	6		Burkina Faso	-	1	-	1	1	
Iran	-	15	-	15	15		Cameroon	1	2	-	3	3	
Iraq	-	47	1	46	47		Djibouti	-	1	-	1	1	
Israel	30	128	14	144	158		Egypt	-	26	1	25	26	
Jordan	1	11	1	11	12		Ghana	-	2	-	2	2	
Kuwait	1	15	-	16	16		Kenya	-	7	-	7	7	
Lebanon	2	10	-	12	12		Liberia	-	1	-	1	1	
Oman	1	7	-	8	8		Malawi		1		1	1	
Qatar	1	27	1	27	28		Morocco	_	2		2	2	
Saudi Arabia	4	137	4	137	141		Mozambique	-	1	1	_	1	
United Arab Emirates	-	47	2	45	47		Namibia	_	1	-	1	1	
Subtotal	42	448	23	467	490	0.5	Niger		1			1	
EUROPE							_	2	125	1	126	127	
Albania	-	1	-	1	1		Nigeria						
Austria	23	128	3	148	151		Rwanda	-	1		1	1	
Belarus	-	1	-	1	1		South Africa	11	88	3	96	99	
Belgium	39	177	9	207	216		Sudan	-	1		1	1	
Bosnia and Herzegovina	-	1	-	1	1		Tanzania	-	1		1	1	
Bulgaria	-	12	-	12	12		Tunisia	-	2	-	2	2	
Croatia	4	22	1	25	26		Uganda	-	2	-	2	2	
Cyprus	3	17	-	20	20		Zambia	-	4	-	4	4	
Czech Republic	13	84	2	95	97		Zimbabwe	-	1	-	1	1	
Denmark	35	173	3	205	208		Subtotal	14	277	7	284	291	0.3
Estonia	-	14	-	14	14		NORTH AMERICA						
Faroe Islands	-	1	-	1	1		Canada	1,011	971	176	1,806	1,982	
Finland	19	98	1	116	117		Mexico	59	188		242	247	
France	92	385	18	459	477		United States			11,795			
Germany	220	952	37	1,135	1,172		Subtotal		33.905				83.3
Greece	11	74	3	82	85			45,022	,				03.3
Hungary	7	44	1	50	51		CARIBBEAN	-	33	1	32	33	-
Iceland	1	7	-	8	8		CENTRAL AMERICA	1	29	2	28	30	-
Ireland	12	76	2	86	88		SOUTH AMERICA	22	383	23	382	405	0.4
Italy	47	443	19	471	490		ASIA PACIFIC	98	603	27	674	701	0.7
Latvia	1	8	-	9	9		TOTAL CUALIFIED				-		-
Liechtenstein	1	-	-	1	1		TOTAL QUALIFIED CIRCULATION	51,641	48,671	12,736	87,576	100,312	100.0
Lithuania	-	5	-	5	5								
See Additional Data													

WEBSITE CHANNEL

HTTP://WWW.CEN.ACS.ORG/INDEX.HTML

2018	Pageviews	Sessions	Users	Average Session Duration
July	515,716	345,130	257,580	1:23
August	696,445	405,528	297,108	1:17
September	647,425	437,873	323,141	1:14
October	686,615	481,381	358,266	1:08
November	649,197	461,729	347,018	1:09
December	561,287	399,052	307,238	1:09
AVERAGE:	626,114	421,782	315,058	1:13

July - December 2018 data was provided by Google Analytics. All website activity is audited by BPA Worldwide.

WEBSITE GLOSSARY

Pageviews: A Pageview is recorded each time a page implanted with the JavaScript code (tag) is displayed in a browser window. This will occur whether the page is served directly from the web server, from a proxy, or from the browser's cache.

Sessions: A single continuous set of activity attributable to a cookied browser resulting in one or more pulled text and/or graphics downloads from a site. A period of 30 minutes of inactivity will terminate the session.

Users: An identified and unduplicated Cookied Browser that accesses Internet content or advertising during a measurement period.

Average Session Duration: The time visitors remain on a site per session.

ADDITIONAL DATA

MAGAZINE: METHOD OF DISTRIBUTION:

All qualified circulation conforms to the field served and definition of recipient qualification, as reported. Print copies are distributed via postal services or other carriers. Recipients of the digital version are notified via email when the version is available.

STATEMENT OF CONTENT PLATFORM:

Editorial Replica - If a print edition exists, editorial and design are unchanged from the original print edition. Each issue's content and design are identical to the original edition. Apart from minor updates, the content cannot change once the issue is made available.

PARAGRAPH 1:

Qualified paid Membership Benefit subscriptions averaging 87,703 copies were sold to qualified recipients at the following subscription prices: \$62.33. Members yearly subscription price is included in the dues.

GEOGRAPHIC DISTRIBUTION:

Geographic data for Websites is not reported at the media owner's option.

PUBLISHER'S AFFIDAVIT

We hereby make oath and say that all data set forth in this statement are true.

Stephanie Holland, Director, Advertising Sales & C&EN Marketing

Bibiana Campos Seijo, Editor-in-Chief & VP, C&EN Media Group

(At least one of the above signatures must be that of an officer of the publishing company or its authorized representative.)

IMPORTANT NOTE:

This unaudited brand report has been checked against the previous audit report. It will be included in the annual audit made by BPA Worldwide.

Date signed State City

Туре

District of Columbia Washington Received by BPA Worldwide January 30, 2019

ID Number C394B0D8

A not-for-profit organization since 1931, BPA Worldwide is governed by a tripartite board comprised of media owners, advertising agencies and advertisers. Headquartered in Shelton, Connecticut, USA, BPA has the largest membership of any media-auditing organization in the world, spanning more than 30 countries. Globally, BPA audits media properties including consumer magazines, newspapers, web sites, events, email newsletters, databases, wireless, social media and other advertiser-supported media—as well as advertiser and agency members. Visit www.bpaww.com for the latest audit reports, membership information and publishing and advertising industry news.

January 30, 2019