Response to the August 2, 2017 "press release" of the New York Antifluoridation group "NYSCOF", entitled *Fluoridation: A Failed Tooth Decay Preventive, Federal Data Shows*

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1. Nyscof: New York, August 2, 2017 – After 72 years of fluoridation, reaching 2/3 of Americans, promising to substantially reduce tooth decay, especially in poor children, the American Journal of Public Health (2017) reports "Despite significant financial, training, and program investments, US children's caries experience and inequities continued to increase over the last 20 years," reports the New York State Coalition Opposed to Fluoridation, Inc. (NYSCOF)

Facts:
The New York State Coalition Opposed to Fluoridation is a small antifluoridation activist group in New York. Neither this group, nor its Director, Paul Beeber, has any qualifications or credentials which accord credence to its opinions or recommendations on a broad public health initiative such as water fluoridation.

Because a disease preventive public health initiative cannot keep up with the increasing incidence of that disease does not mean that the initiative is not effective. Water fluoridation has never been promoted, or expected, to eradicate all dental decay, nor has it ever been expected to compensate for all of the myriad variables which keep this incidence on the rise. It is simply one means to prevent dental decay which has been clearly demonstrated to be effective in countless peer-reviewed scientific studies. The CDC conservatively cites a 25% reduction in dental decay attributable to water fluoridation, with recent studies demonstrating as much as 60% reduction. (1) (2)

A list of effectiveness studies may be found at the end of this document.

2. Nyscof: Children are fluoride-overdosed while oral-health-disparities between poor and non-poor increase. "America's shockingly poor dental care system," is profiled in the Yakima Herald.

Facts:
The parameter utilized for the claim of "fluoride overdosed" is dental fluorosis. The interpretation of CDC data noted in the linked "press release" is that of the antifluoridation faction, FAN, not that of the CDC, or any other credible source.

Dental fluorosis is a cosmetic change in the surface enamel of the tooth. It's most common forms are very mild to mild. These forms appear as faint white streaks or spots that are typically only visible to the dental team once the teeth have been air dried in the dental chair. It does not affect the function of the tooth.

The rarest form of dental fluorosis is severe dental fluorosis. These teeth have rough, pitted surfaces and dark stains. Severe dental fluorosis is rare in the US and, as clearly noted by the 2006 NRC Committee on Fluoride in Drinking Water, does not occur in communities with a water fluoride content of 2.0 ppm, or less. Water is fluoridated at 0.7 ppm, one third that level. (3)

Additionally, the US Community Preventive Services Task Force found no evidence that community water fluoridation results in severe dental fluorosis. (7)

While these activists speculate that dental fluorosis is a sign of fluoride toxicity, there is no valid, peer-reviewed scientific evidence of an association of this fluorosis with any toxics effects, whatsoever.

3. The silent oral-health epidemic, declared in 2000 by US Surgeon General David Satcher, persists today, he says. Fluoridation, an outdated 1945 concept, predicted only 10% would suffer mild dental fluorosis (white-flecked teeth). However, 58% of adolescents are now afflicted - some with more severe fluorosis (stained, pitted teeth) without benefit of less tooth decay.

Facts:
This is an egregiously misleading and erroneous statement.

A. First of all, the link to a supposed statement by Surgeon General David Satcher, actually links to a 2000 report on Oral Health in America, by US Surgeon General Donna Shalala, not David Satcher.

B. Second, the confusing wording of this claim implies that David Satcher stated that fluoridation is an outdated "1945 concept, predicted only 10%…..". This is a statement by "Nyscof", not by Satcher, or any other credible source.

C. Third, the "58% of adolescents are now afflicted" is from an interpretation of CDC data by personnel of the Fluoride Action Network, not that which the CDC, or any other credible source, has derived from this data. (4)

D. Fourth, even if one did accord credence to the "58%" interpretation, this figure is for all levels of dental fluorosis combined, whereas the "10%" to which "Nyscof" seeks to compare it, was for mild dental fluorosis only.

E. Fifth, the "more severe fluorosis (stained, pitted teeth) without benefit of less tooth decay" does not occur as a result of water fluoridation. As clearly noted by the 2006 NRC Committee on Fluoride in Drinking Water, severe dental fluorosis does not occur in communities with a water fluoride content of 2.0 ppm or below. Water is fluoridated at 0.7 ppm, one third that level. (3)

Additionally, the U.S. Community Preventive Services Task Force found no evidence that community water fluoridation results in severe dental fluorosis. (7)

F. Sixth, the only dental fluorosis which may be attributable to optimally fluoridated water is mild to very mild, a barely detectable effect which causes no adverse effect on cosmetics, form, function, or health of teeth. As peer-reviewed science has demonstrated mildly fluorosed teeth to be more decay resistant, many consider this effect to not even be undesirable, much less adverse. (5)

G. Seventh, the claim that fluoridation is "based on outdated science" is nothing more than a stale catch-phrase of fluoridation opponents which has no foundation in fact. In actuality, water fluoridation is based on the most current, up-to-date science available. While fluoridation opponents frequently rely upon 50 year old quotes, and long since discredited, half-century old studies, the effectiveness of fluoridation is clearly demonstrated in peer-reviewed science as recently as 2016. In regard to any "risk" from fluoridation, there is none. In the entire 72 year history of fluoridation, there have been no, proven adverse effects. Studies put forth by opponents in support of their claims of risk, are either irrelevant to fluoride at the level at which water is fluoridated, are invalid as has been shown in peer-reviewed critiques of them, or are entirely misrepresented by fluoridation opponents, with studies frequently demonstrating the opposite of what opponents claim.

An excellent example of the misuse of studies by opponents is provided by the recent EPA rejection of a meritless petition submitted to that agency by the Fluoride Action Network requesting a ban of fluoridation substances. As support for this request, the petitioners put forth

the human and animal studies they frequently claim to be "300 studies showing neurotoxicity of fluoride". In its 40 page rejection of this petition, EPA reviewers systematically dismantled all arguments put forth by petitioners, citing facts and evidence which clearly contradicted those arguments. In addition, the reviewers explained in detail, the irrelevance, invalidity, and misrepresentation by petitioners, of those supporting studies. The EPA rejection document can be viewed in entirety on the "Federal Register". (6)

4. Nyscof: For example, the Journal of the American Dental Association (Dye 2017) reports, 65% of poor 6-8 year-olds and 12-15 year-olds have cavities in their primary and permanent teeth, respectively.

Dye reports: "The prevalence of pediatric caries in the United States has remained consistent for the past 3 decades."

"... there has been little improvement in preventing caries initiation," said Dye.

Facts:
Water fluoridation has never been expected, or promoted, to be an initiative which would eradicate all dental decay. It is simply a measure which takes full advantage of the dental decay prevention benefit of a mineral humans always have, and always will, ingest in their water. If, as researchers have clearly demonstrated, a significant reduction in devastating oral infection can be derived by minutely increasing the concentration of existing fluoride in water supplies, with no adverse effects…..it makes no sense not to do so.

The cause and preventive factors involved in dental decay are myriad, and not simply dependent on but one, single preventive measure, fluoridation. Because we continue to have an overwhelming problem with untreated dental decay is one of the most compelling reasons for fluoridation, not against it.

5. Nyscof: Is organized dentistry, leading fluoridation promoters, to blame?

Reason Magazine reports "The over-the-top intimidation tactics of the ADA [American Dental Association] and its shiny-toothed shock troops," contributed to high healthcare costs. A lawmaker is quoted as saying "I put their power right up there with the NRA."

The Washington Post ("The unexpected political power of dentists") quoted a Harvard dentist comparing the ADA to ISIS.

Facts:
Unsubstantiated conspiracy nonsense. While this has been a staple of fluoridation opposition from the very beginning of the initiative 72 years ago, it is irrelevant, and nothing more than an attempt to divert attention from the facts supported by peer-reviewed scientific evidence.

References

(1) Community Water Fluoridation
US Centers For Disease Control and Prevention 2016
https://www.cdc.gov/fluoridation/index.html

(2) Caries Res. 1993;27 Suppl 1:2-8.
Efficacy of preventive agents for dental caries. Systemic fluorides: water fluoridation.
Murray JJ.
Department of Child Dental Health, Dental School, University of Newcastle upon Tyne, UK.

(3) Fluoride in Drinking Water: A Scientific Review of EPA's Standards
Committee on Fluoride in Drinking Water, National Research Council
2006

(4) National Health and Nutrition Examination Survey 2011-2012 Data Documentation Codebook, and Frequencies
Oral Health - Dentition (OHXDEN_G)
Data File: OHXDEN_G.xpt
First Published: March 2014
Last Revised: NA

https://wwwn.cdc.gov/Nchs/Nhanes/2011-2012/OHXDEN_G.htm

(5) The Association Between Enamel Fluorosis and Dental Caries in U.S. Schoolchildren
Hiroko Iida and Jayanth V. Kumar
J Am Dent Assoc 2009;140;855-862

(6) Fluoride Chemicals in Drinking Water; TSCA Section 21 Petition; Reasons for Agency Response
Federal Register
https://www.federalregister.gov/documents/2017/02/27/2017-03829/fluoride-chemicals-in-drinking-water-tsca-section-21-petition-reasons-for-agency-response

(7) Oral Health: Preventing Dental Caries, Community Water Fluoridation; U.S .Community Preventive Services Task Force: Task Force Finding and Rationale Statement, https://www.thecommunityguide.org/sites/default/files/assets/Oral-Health-Caries-Community-Water-Fluoridation_3.pdf

Effectiveness Studies

1) 2015

Results
In the 3 areas the proportion of children who received a dental examination varied; 77.5% (n = 825) for the fluoridated area, 80.1% (n = 781) for the pre-fluoridated area and 55.3% (n = 523) for the non-fluoridated area. The mean dmft was 1.40 for the fluoridated area, 2.02 for the pre-fluoridated area and 2.09 for the non-fluoridated area. These differences were statistically significant ($p < 0.01$). Differences were also noted in the proportion of children who were caries free, 62.6% fluoridated area, 50.8% for the pre-fluoride area and 48.6% for the non-fluoride location.
Conclusion
The children living in the well-established fluoridated area had less dental caries and a higher proportion free from disease when compared with the other two areas which were not fluoridated. Fluoridation demonstrated a clear benefit in terms of better oral health for young children.
---The Dental Health of primary school children living in fluoridated, pre-fluoridated and non-fluoridated communities in New South Wales, Australia
Anthony S Blinkhorn, Roy Byun, George Johnson, Pathik Metha, Meredith Kay, and Peter Lewis
BMC Oral Health 2015, 15:9

2) 2000

RESULTS:
The prevalence of dental caries was inversely related and the prevalence of fluorosis was directly related to the concentration of fluoride in the drinking water. The mean DMFS in the communities with 0.8 to 1.4 ppm fluoride was 53.9 percent to 62.4 percent lower than that in communities with negligible amounts of fluoride. Multivariate analysis showed that water fluoride level was the strongest factor influencing DMFS scores. The prevalence of fluorosis ranged from 1.7 percent to 15.4 percent, and the increase in fluorosis with increasing fluoride exposure was limited entirely to the milder forms.

-----J Public Health Dent. 2000 Summer;60(3):147-53.
The prevalence of dental caries and fluorosis in Japanese communities with up to 1.4 ppm of naturally occurring fluoride.
Tsutsui A, Yagi M, Horowitz AM.
Department of Preventive Dentistry, Fukuoka Dental College, Fukuoka, Japan.

3) 2000

CONCLUSIONS:
Caries levels are lower among children with fluoridated domestic water supplies. Decay levels are much lower in 2002 than they were in 1984 and in the 1960s. The oral health of the less well off is worse than that of the rest of the population. The prevalence of dental fluorosis is higher amongst children and adolescents with fluoridated water supplies. Comparisons with 1984 data show an increase in the prevalence of fluorosis since that time.

----Community Dent Health. 2004 Mar;21(1):37-44.
Dental caries and enamel fluorosis among the fluoridated and non-fluoridated populations in the Republic of Ireland in 2002.
Whelton H, Crowley E, O'Mullane D, Donaldson M, Kelleher V, Cronin M.
Oral Health Services Research Centre, University Dental School and Hospital, Wilton, Cork, Ireland.

4) 1995

CONCLUSIONS:
The ingestion of water containing 1 ppm or less fluoride during the time of tooth development may result in dental fluorosis, albeit in its milder forms. However, in these times of numerous products containing fluoride being available, children ingesting water containing 1 ppm fluoride continue to derive caries protection compared to children ingesting water with negligible amounts of fluoride. Thus, the potential for developing a relatively minor unesthetic condition must be weighed against the potential for reducing dental disease.

-----J Public Health Dent. 1995 Spring;55(2):79-84.
Dental fluorosis and caries prevalence in children residing in communities with different levels of fluoride in the water.
Jackson RD, Kelly SA, Katz BP, Hull JR, Stookey GK.
Oral Health Research Institute, Indianapolis, IN 46202-2876, USA.

5) 2004

Conclusions:
The results of this study support existing work suggesting water fluoridation together with the use of fluoridated dentifrice provides improved caries prevention over the use of fluoridated dentifrice alone. The social gradient between caries and deprivation appears to be lower in the fluoridated population compared to the non-fluoridated population, particularly when

considering caries into dentine, demonstrating a reduction in inequalities of oral health for the most deprived individuals in the population.

----The association between social deprivation and the prevalence and severity of dental caries and fluorosis in populations with and without water fluoridation
Michael G McGrady, Roger P Ellwood, [...], and Iain A Pretty

6) 2012

CONCLUSIONS:
Fewer studies have been published recently. More of these have investigated effect at the multi-community, state or even national level. The dmf/DMF index remains the most widely used measure of effect. % CR were lower in recent studies, and the 'halo' effect was discussed frequently. Nevertheless, reductions were still substantial. Statistical control for confounding factors is now routine, although the effect on per cent reductions tended to be small. Further thought is needed about the purpose of evaluation and whether measures of effect and study design are appropriate for that purpose.

-----Community Dent Oral Epidemiol. 2012 Oct;40 Suppl 2:55-64.
Effectiveness of water fluoridation in caries prevention.
Rugg-Gunn AJ, Do L.
Newcastle University, UK.

7) 2012

CONCLUSIONS:
Data showed a significant decrease in dental caries across the entire country, with an average reduction of 25% occurring every 5 years. General trends indicated that a reduction in DMFT index values occurred over time, that a further reduction in DMFT index values occurred when a municipality fluoridated its water supply, and mean DMFT index values were lower in larger than in smaller municipalities.

----Int Dent J. 2012 Dec;62(6):308-14. doi: 10.1111/j.1875-595x.2012.00124.x.
Decline in dental caries among 12-year-old children in Brazil, 1980-2005.
Lauris JR, da Silva Bastos R, de Magalhaes Bastos JR.
Department of Paediatric Dentistry, University of São Paulo, Bauru, São Paulo, Brazil.

8). 2012

Abstract
The effectiveness of fluoridation has been documented by observational and interventional studies for over 50 years. Data are available from 113 studies in 23 countries. The modal reduction in DMFT values for primary teeth was 40-49% and 50-59% for permanent teeth. The pattern of caries now occurring in fluoride and low-fluoride areas in 15- to 16-year-old children illustrates the impact of water fluoridation on first and second molars.

----Caries Res. 1993;27 Suppl 1:2-8.
Efficacy of preventive agents for dental caries. Systemic fluorides: water fluoridation.
Murray JJ.
Department of Child Dental Health, Dental School, University of Newcastle upon Tyne, UK.

9) 1993

CONCLUSIONS:
The survey provides further evidence of the effectiveness in reducing dental caries experience up to 16 years of age. The extra intricacies involved in using the Percentage Lifetime Exposure method did not provide much more information when compared to the simpler Estimated Fluoridation Status method.

-----Community Dent Health. 2012 Dec;29(4):293-6.
Caries status in 16 year-olds with varying exposure to water fluoridation in Ireland.
Mullen J, McGaffin J, Farvardin N, Brightman S, Haire C, Freeman R.
Health Service Executive, Sligo, Republic of Ireland.

10). 2012

CONCLUSIONS:
Children with severe dental caries had statistically significantly lower numbers of lesions if they lived in a fluoridated area. The lower treatment need in such high-risk children has important implications for publicly-funded dental care.

------Community Dent Health. 2013 Mar;30(1):15-8.
Fluoridation and dental caries severity in young children treated under general anaesthesia: an analysis of treatment records in a 10-year case series.
Kamel MS, Thomson WM, Drummond BK.
Department of Oral Sciences, Sir John Walsh Research Institute, School of Dentistry, The University of Otago, Dunedin, New Zealand.

Research Design: Consecutive clinical case series: clinical details (diagnoses and the treatments provided) were recorded for children who had received comprehensive dental care under GA between 2000 and 2009. Age, gender, ethnicity, socio-economic status and fluoridation status (determined from the residential address) were also recorded.

Cost Savings Studies

The cost savings of fluoridation are well documented:

1. For most cities, every $1 invested in water fluoridation saves $38 in dental treatment costs.

------"Cost Savings of Community Water Fluoridation,"
U.S. Centers for Disease Control and
Prevention, accessed on March 14, 2011 at
http://www.cdc.gov/fluoridation/fact_sheets/cost.htm.

2. A Texas study confirmed that the state saved $24 per child, per year in Medicaid expenditures for children because of the cavities that were prevented by drinking
fluoridated water.

------ "Water Fluoridation Costs in Texas: Texas Health Steps (EPSDT-Medicaid),
Department of Oral Health Website (2000),
www.dshs.state.tx.us/dental/pdf/fluoridation.pdf,

3. A 2010 study in New York State found that Medicaid enrollees in less fluoridated counties needed 33 percent more fillings, root canals, and extractions than those in counties where fluoridated water was much more prevalent. As a result, the treatment costs per Medicaid recipient were $23.65 higher for those living in less fluoridated counties.

----------Kumar J.V., Adekugbe O., Melnik T.A., "Geographic Variation in Medicaid Claims for Dental Procedures in New York State: Role of Fluoridation Under Contemporary Conditions,"
Public Health Reports, (September-October 2010) Vol. 125, No. 5, 647-54.

----------The original figure ($23.63) was corrected in a subsequent edition of this journal and clarified to be $23.65. See: "Letters to the Editor,"
Public Health Reports (November-
December 2010), Vol. 125, 788.

4. Researchers estimated that in 2003 Colorado saved nearly $149 million in unnecessary treatment costs by fluoridating public water supplies—average savings of roughly $61 per person.

------O'Connell J.M. et al., "Costs and savings associated with community water fluoridation programs in Colorado,"
Preventing Chronic Disease (November 2005), accessed on
March 12, 2011 at http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1459459/.

5. A 1999 study compared Louisiana parishes (counties) that were fluoridated with those that were not. The study found that low-income children in communities without fluoridated water were three times more likely than those in communities with fluoridated water to need dental treatment in a hospital operating room.

-------Water Fluoridation and Costs of Medicaid Treatment for Dental Decay – Louisiana, 1995-1996,"
Morbidity and Mortality Weekly Report, (U.S. Centers for Disease Control and Prevention), September 3, 1999, accessed on March 11, 2011 at
http://www.cdc.gov/mmwr/preview/mmwrhtml/mm4834a2.htm.

6. By reducing the incidence of decay, fluoridation makes it less likely that toothaches or other serious dental problems will drive people to hospital emergency rooms (ERs)—where treatment costs are high. A 2010 survey of hospitals in Washington State found that dental disorders were the leading reason why uninsured patients visited ERs.

-------Washington State Hospital Association, Emergency Room Use (October 2010) 8-12, http://www.wsha.org/files/127/ERreport.pdf, accessed February 8, 2011.

7. Scientists who testified before Congress in 1995 estimated that national savings from water fluoridation totaled $3.84 billion each

------Michael W. Easley, DDS, MP, "Perspectives on the Science Supporting Florida's Public Health Policy for Community Water Fluoridation,"
Florida Journal of Environmental Health, Vol. 191, Dec. 2005, accessed on March 16, 2011 at http://www.doh.state.fl.us/family/dental/perspectives.pdf.