COMMENT

To: Bill Scarpato and Aäna Maguire

From: Mary Jones

Date: February 4, 2013

Re: TLR Comment

*Regulating for the Public Health: Perchlorate Regulation Under the Safe Drinking Water Act

*Exceeds Congressional Authority

I. INTRODUCTION

More than 150,000 public water systems serve more than 300 million customers in the United States.\(^1\) Approximately eighty percent of these systems are considered “very small” and serve five hundred or fewer customers.\(^2\) All of them are subject to federal regulation under the Safe Drinking Water Act (SDWA).\(^3\) The cost of complying with a new water regulation usually involves installation of new technology, training of staff, monitoring contaminant levels, and


\(^2\) Id. For a full breakout of system size and population served:

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<th>Table 1 – System Size by Population Served</th>
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<td># of systems</td>
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<td>Population served.</td>
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\(^3\) Id.

assorted treatment costs. These costs remain relatively constant regardless of a water system’s size.

In 2001, the United States Environmental Protection Agency (EPA) adopted a new standard for arsenic in drinking water at ten parts per billion, thereby replacing the old standard of fifty parts per billion. Regulation compliance was estimated to cost $4.5 billion nationwide. While that number is staggering in and of itself, the most interesting numbers come when evaluating the annual cost per household of regulation compliance, as determined by system size: $326.82 for a system serving 100 or fewer customers, as opposed to $0.86 for a system serving a million or more customers.

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5 See, e.g., WATER SUPPLY & WATER RES. DIV., EPA, EPA/600/R-11/090, COSTS OF ARSENIC REMOVAL TECHNOLOGIES FOR SMALL WATER SYSTEMS: U.S. EPA ARSENIC REMOVAL TECHNOLOGY DEMONSTRATION PROGRAM 69 (2011) (showing that the cost of a removal system depends on the rate of flow of the water, not on the size of the system).


7 Russell et al., supra note 4, at 61.

8 National Primary Drinking Water Regulations, Arsenic and Clarifications to Compliance and New Source Contaminants Monitoring, 66 Fed. Reg. 6976, 7011 (Jan. 22, 2001). EPA provided a household cost analysis based on the size of the water system and alternative regulatory levels. That breakdown was:

**Table 2 – Mean Annual Costs Per Household [in 1999 dollars]**

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Id.
The EPA will propose a new regulation for perchlorate in February 2013. Promulgation of perchlorate regulation provides a useful lens to view the Safe Drinking Water Act, reassess the bounds of federalism, and reevaluate the use of science in the regulatory process.

The Clean Water Act, though clearly relevant to this area and important to consider in any holistic approach to federal water regulation, is beyond the scope of this Comment because of the differing statutory framework and enforcement mechanisms. Further, issues relating to the regulation of navigable waters (surface waters) under the Commerce Clause are beyond the scope of this Comment. Equally relevant to treatment and remediation is the Comprehensive Environmental Response, Compensation, and Liability Act, more commonly known as CERCLA. CERCLA is beyond the scope of this Comment because it relates more to cleanup of

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12 For case law related to surface water regulation and the Clean Water Act, see Solid Waste Agency of Northern Cook County v. United States Army Corps of Engineers, 531 U.S. 159, 171–72 (2001), declining to extend regulatory authority under the Clean Water Act to purely instate waters that did not fit the definition of “navigable waters.”

toxic waste sites than to regulation and treatment of drinking water.\textsuperscript{14} Finally, this Comment will not address the administrative processes outlined by the Administrative Procedure Act\textsuperscript{15} because they do not bear on regulatory promulgation or the constitutionality of the SDWA.\textsuperscript{16}

This Comment addresses two main questions: 1) whether the SDWA is a proper exercise of congressional authority under the Constitution, and if so, under what power it is enacted; and 2) if the SDWA is constitutional, whether the EPA can conform to the statute and still regulate perchlorate. Section II.A begins with an explanation of the SDWA and how the EPA enacts regulation pursuant to that authority.\textsuperscript{17} The Overview continues with a discussion of perchlorate regulation.\textsuperscript{18} Section II.C explores the constitutional issues surrounding the SDWA.\textsuperscript{19} Part II concludes with a discussion of the limited case law and scholarship related to the SDWA and


\textsuperscript{17} See \textit{infra} Section II.A.1 for a discussion of the SDWA requirements for regulation and Section II.A.2 for a discussion of the process for promulgating SDWA regulation.

\textsuperscript{18} See \textit{infra} Section II.B for a discussion of the positive and negative effects on human health of perchlorate exposure, where and how frequently perchlorate occurs, and the history of perchlorate regulation to this point.

\textsuperscript{19} See \textit{infra} Section II.C for a discussion of the constitutional authority exercised when enacting the SDWA and the limits of that authority as cabined by the federalist principles codified in the Tenth Amendment.
regulation thereunder.\textsuperscript{20}

Part III begins by showing that the SDWA, though arguably enacted under Commerce Clause authority, is subject to the bounds of federalism expressed in the Tenth Amendment and therefore is an unconstitutional grant of authority to the EPA.\textsuperscript{21} Section III.B shows that even if the SDWA were constitutional, the proposed perchlorate regulation does not conform to the statutory mandate and is beyond the pale of the EPA’s authority.\textsuperscript{22} Finally, Section III.C addresses the legitimate public policy concerns over the public health and the role of federal regulation in promoting the public health.\textsuperscript{23} In order to reconcile the policy issues raised by the SDWA and the constitutional limitations thereon, the statute should be revised to correct issues of vagueness and arbitrariness. Part IV provides a brief summation and conclusion.

II. Overview

As described below, federal regulation of public water systems occurs under the SDWA.\textsuperscript{24} The regulatory process can be a long one, but it begins with the EPA Administrator’s determination that a contaminant meets the statutory requirements for regulation.\textsuperscript{25} The SDWA sets out three requirements contaminant regulation.\textsuperscript{26} The three requirements are somewhat

\begin{footnotesize}
\begin{enumerate}
\item See \textit{infra} Section II.C for a discussion of \textit{Nebraska v. EPA}, 331 F.3d 995 (D.C. Cir. 2003), the leading case regarding relevant issues with the SDWA, and an elaboration of the most common challenges to SDWA regulation.
\item See \textit{infra} Section III.A for a discussion of why the SDWA is not properly enacted under Commerce Clause authority and violates the Tenth Amendment.
\item See \textit{infra} Section III.B for a discussion of why the proposed perchlorate regulations do not conform to the statutory requirements of the SDWA and exceed the EPA’s authority.
\item See \textit{infra} Section III.C for a discussion of why the SDWA, though bad law, makes for good policy and how it should be revised.
\item See \textit{id.} § 300g-1(b)(1)(A) (requiring the Administrator to determine that a contaminant meets the requirements before promulgating regulation).
\item I\textit{d.} §§ 300g-1(b)(1)(A)(i)–(iii).
\end{enumerate}
\end{footnotesize}
amorphous and spawn most of the public comment related to possible regulation.\textsuperscript{27} Perchlorate, a goitrogenic contaminant,\textsuperscript{28} will be the subject of a proposed new federal regulation due in February 2013.\textsuperscript{29} Regulatory history surrounding perchlorate shows a new and different working definition for two of the statutory requirements.\textsuperscript{30} This change in definition allows for argument over what constitutes an adverse health effect or sufficient frequency of occurrence.\textsuperscript{31}

Scholarship and authorities treating the SDWA are rare, and none of them have addressed the potential legal implications of perchlorate regulation.\textsuperscript{32} The SDWA implicitly exercises the Commerce Clause authority granted to Congress in Article I of the Constitution.\textsuperscript{33} The EPA asserts that several public water systems engage in interstate commerce by selling water over

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\textsuperscript{27} Public comments on Agency action and proposals can be viewed at www.regulations.gov. The Preliminary Regulatory Determination on Perchlorate has a docket ID number of EPA-HQ-OW-2008-0692. The docket includes 2287 public comments, almost entirely centered on health effects and occurrence.

\textsuperscript{28} Goitrogens are contaminants that tend to produce goiter and related thyroid disorders. See (look this up in dictionary at school).

\textsuperscript{29} See Drinking Water: Regulatory Determination on Perchlorate, 76 Fed. Reg. 7762, 7763 (Feb. 11, 2011) (noting that the SDWA requires a regulation proposal within twenty-four months of the determination to regulate, and a final regulation within eighteen months thereafter).

\textsuperscript{30} See id. (referring to iodide uptake inhibition as the health event triggering regulation); contra Drinking Water: Preliminary Regulatory Determination on Perchlorate, 73 Fed. Reg. 60,262, 60,266 (Oct. 10, 2008) (explaining that iodide uptake inhibition “although not adverse, is the most appropriate precursor event”) (emphasis added); see also 76 Fed. Reg. at 7763 (determining that perchlorate occurs with a frequency and at levels of health concerns); contra 73 Fed. Reg. at 60,275 (citing the same studies as the 2011 determination and concluding that perchlorate does not occur at with sufficient frequency and at levels of public health concern to warrant federal regulation).

\textsuperscript{31} The difference between an “adverse health effect” and a “precursor event” is not insignificant with regard to placing limits on the EPA’s authority to regulate drinking water. Additionally, the Agency’s changed position on what constitutes “sufficient frequency” renders the statutory scheme less predictable, making the entire endeavor look arbitrary at best and capricious at worst.

\textsuperscript{32} See infra Section II.D for a discussion of the relevant authorities on the SDWA.

\textsuperscript{33} See United States v. Morrison, 529 U.S. 598, 607 (2000) (noting that every congressional act must exercise an affirmative grant of power from the Constitution); Nebraska v. EPA, 331 F.3d 995, 998 (D.C. Cir. 2003) (inferring that the authority for the statute derived from the Commerce Clause).
State lines, and thus the Act is not subject to a facial challenge. While the Commerce Clause authority is expansive, recent cases have revitalized the Tenth Amendment and reasserted the province of state sovereignty, specifically with regard to the police power.

A. The Safe Drinking Water Act

The Safety of Public Water Systems, Safe Drinking Water Act, authorizes the EPA to promulgate contaminant regulation for the provision of drinking water by public water systems (PWSs). By its terms, the SDWA applies to all public water systems and requires the EPA to set standards for drinking water quality. Binding regulation occurs in the form of National Primary Drinking Water Regulations (NPDWRs). NPDWRs specify either a Maximum Contaminant Level (MCL) or an approved treatment technique for a given contaminant. These regulations also outline quality control and testing procedures to ensure compliance.

There are two major facets to regulation under the SDWA: eligibility of contaminants and the process for promulgating regulation. Contaminants become eligible for SDWA regulation upon the EPA Administrator’s determination that said contaminant meets the statutory requirements. After that decision, the EPA may decide regulation is not necessary or beneficial,
or it may decide to begin the process of promulgation.\textsuperscript{44} The first subsection deals with the three requirements and their somewhat murky character.\textsuperscript{45} The second subsection deals with the general process of creating SDWA regulations.\textsuperscript{46}

1. Statutory Backdrop

A contaminant must meet three criteria to be eligible for regulation under the SDWA. The EPA Administrator must determine that (1) “the contaminant may have an adverse effect on the health of persons;” (2) “the contaminant [occurs or is likely to occur] in public water systems with a frequency and at levels of public health concern;” and (3) “in the sole judgment of the Administrator, regulation of such contaminant presents a meaningful opportunity for health risk reduction for persons served by public water systems.”\textsuperscript{47} Jurisdictional clauses throughout the SDWA determine when and how stakeholders and interested individuals may bring petitions to a judicial body, and on what grounds.\textsuperscript{48}

The definition of an “adverse health effect” is not entirely clear. One source defines it as “the causation, promotion, facilitation and/or exacerbation of a structural and/or functional abnormality, with the implication that the abnormality produced has the potential of lowering the

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\textsuperscript{44} \textit{Id.} § 300g-1(b)(1)(B).
\textsuperscript{45} \textit{Id.} §§ 300g-1(b)(1)(A)(i)–(iii).
\textsuperscript{46} \textit{Id.} § 300g-1(b)(1)(B).
\textsuperscript{47} \textit{Id.} § 300g-1(b)(1)(A)(i)-(iii).
\textsuperscript{48} For example, § 300g-1(b)(1)(B)(i)(III) states that the determination of which unregulated contaminants are selected for a given Contaminant Candidate List, and therefore possible future regulation, is not subject to judicial review. Section 300j-7 contains the general judicial review provisions of the SDWA and requires, among other things, that actions pertaining to the establishment of regulations be filed only in the D.C. Circuit. Jurisdictional clauses will not be the focal point of this Comment. Research has revealed no scholarship on the jurisdictional clauses of the SDWA. For an interesting look at the role of executive (including agencies) acquiescence in jurisdiction stripping clauses, see Tara Leigh Grove, \textit{The Article II Safeguards of Federal Jurisdiction}, 112 COLUM. L. REV. 250 (2012). This Comment will largely not touch the issue of enforcement. For these purposes, it suffices to say that, pursuant to § 300g-2, individual States will generally have enforcement responsibility for all SDWA regulations.
quality of life, contributing to a disabling illness, or leading to a premature death.”49 Another source defines the term as “a change in body function or cell structure that might lead to disease or health problems.”50 The EPA does not offer direct guidance as to what constitutes an adverse health effect for non-carcinogens.51 However, the agency states that it calculates a contaminant reference dose (RfD) “without an appreciable risk of deleterious effects during a lifetime,” and takes into consideration the health effects of contaminants on particularly vulnerable subgroups.52 In previous instances, “adverse health effects” giving rise to regulation included conditions ranging from stomach distress, brain damage, skin damage, and circulatory problems.53 As of this writing, all NPDWRs cite an observable adverse health effect as the reason for regulation.54

The second prong, dealing with the occurrence and frequency of a contaminant in PWSs, proves similarly difficult to define. Prior regulations, and the statute, offer little guidance.55

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53 See 40 C.F.R. § 141.54(b)(1) (2012) (requiring that PWSs provide their customers information with respect to health effects of arsenic).
54 See, e.g., id. (outlining the possible adverse health effects of arsenic).
EPA uses Unregulated Contaminant Monitoring Regulation (UCMR) data to determine where and at what levels a contaminant exists in PWSs. For the UCMR data to be useful, the EPA calculates a Health Reference Level (HRL) using an RfD established to be protective of human health, such that the overall formula is:

$$HRL = \frac{[(RfD \times BW)/DWI] \times RSC}{58}$$

UCMR data is then compared with the HRL to determine how frequently a contaminant occurs in PWSs at levels of public health concern. While the process for determining how frequently a contaminant occurs and at what levels is relatively easy, the EPA does not offer guidance as to what frequency is sufficient to trigger regulation.

Finally, the SDWA contains a subjective third prong for proper regulation. The third prong requires that, “in the sole judgment of the [EPA] Administrator, regulation of [a given] contaminant presents a meaningful opportunity for health risk reduction for persons served by public water systems.” On its face, the EPA Administrator’s evaluation of health risk reduction

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56 Occurrence Data: Accessing Unregulated Contaminant Monitoring Data, EPA, http://water.epa.gov/lawsregs/rulesregs/sdwa/ucmr/data.cfm (last updated Aug. 16, 2012). There are three sets of UCMR data, referred to as UCMR 1, UCMR 2, and UCMR 3. All data sets can be accessed at the above website.

57 An RfD that is protective of human health may be established at the “no-observed-effect-level” (NOEL) or “no-observed-adverse-effect-level” (NOAEL). Drinking Water: Preliminary Regulatory Determination on Perchlorate, 73 Fed. Reg. 60,262, 60,267 (Oct. 10, 2008).

58 OFFICE OF GROUND WATER AND DRINKING WATER, supra note 9, at 2-10 (where BW is a presumed adult body weight of seventy kilograms, DWI is the presumed daily adult drinking water intake of two liters per day, and RSC is the relative source contribution to overall contaminant levels and is set at a default value of twenty percent); see, e.g., 73 Fed. Reg. at 60,275 (using the same formula).

59 See, e.g., 73 Fed. Reg. at 60,269–71, 60,275–77 (discussing the UCMR data on perchlorate, the health reference level, and concluding that perchlorate occurs infrequently at levels of health concern in public water systems).

60 None of the NPDWR announcements include a discussion of what percentage of PWSs must reach threshold levels for a contaminant to occur “sufficiently frequently” to be a public health concern.

is necessarily subjective and amounts to an individual decision without any objective standard or external review.62 No EPA guidance exists that explains when regulation will present a meaningful opportunity for public health risk reduction.63

A contaminant that meets these three criteria is eligible for listing on a Contaminant Candidate List (CCL) and for potential future regulation. Neither the Administrator’s decision to include an unregulated contaminant on a CCL, nor the determination that a given contaminant meets the statutory criteria, is subject to judicial review.64

2. Promulgating Regulation Under the SDWA

Regulation under the SDWA is a complex and protracted exercise. Multiple steps are required before regulation can be enacted, and the process may take years.65 Throughout the regulatory process, opportunities exist for public input and comment that can be utilized to shape

62 The statute goes on to say that “[t]he [EPA] Administrator’s decision whether or not to select an unregulated contaminant for a [Contaminant Candidate List and possible future regulation] … shall not be subject to judicial review.” Id. § 300g-1(b)(1)(B)(i)(III).
63 The EPA provides a basic information website related to the SDWA, where it addresses the question of how the EPA makes determinations to regulate. The EPA’s answer to this question is a restatement of the three prong test from the SDWA and does not further expound on what qualifies as a “meaningful opportunity” to reduce public health risks. See Regulating Public Water Systems and Contaminants Under the Safe Drinking Water Act, EPA, http://water.epa.gov/lawsregs/rulesregs/regulatingcontaminants/basicinformation.cfm (last updated May 21, 2012).
64 See supra note ___ for a discussion of § 300g-1(b)(1)(B)(i)(III), limiting judicial review of CCLs, and why it is not the focus of this Comment.
and inform the direction of regulation.  

The original enactment of the SDWA required the Administrator to assemble and maintain a National Contaminant Occurrence Database (NCOD) for drinking water as of August 6, 1996. The database contains information on the occurrence of regulated and unregulated contaminants in PWSs. UCMR data is published periodically and includes occurrence and frequency information for a list of unregulated contaminants.

Beginning no later than February 1998, and every five years thereafter, the regulations require the Administrator to publish a CCL of presently unregulated contaminants that occur or may occur in PWSs, and may require SDWA regulation. The regulatory process commences before publication of the CCL, when the Administrator consults with the scientific community, including the Science Advisory Board (SAB), the NCOD, and the public to determine which contaminants should be listed for observation and ultimately included in the CCL. When using scientific evidence in the decision making process, the EPA Administrator must consult peer-reviewed studies and supporting studies conducted according to objective scientific principles and must use data collected by accepted methods.

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66 The opportunity for public comment on unregulated contaminants begins before the publication of a CCL. 42 U.S.C.A. § 300g-1(b)(1)(B)(i)(I). A new CCL is published every five years, after consultation with the Scientific Advisory Board and public comment. Id. The public then has an opportunity to comment on any contaminants selected for regulatory determinations. Id. § 300g-1(b)(1)(B)(ii)(I). Every step of the regulatory process involving a maximum contaminant level is open for public comment. Id. § 300g-1(b)(3)(C)(i). When a regulation involves specific treatment techniques, the EPA Administrator is required to seek public comment on proposed technologies and any available alternatives. Id. § 300g-1(b)(3)(C)(ii).

67 Id. § 300j-4(g)(1).

68 Id.

69 See Occurrence Data: Accessing Unregulated Contaminant Monitoring Data, supra note ___.


71 Id. § 300g-1(b)(1)(B)(i).

72 Id. § 300g-1(b)(1)(B)(i)(I).

73 Id. § 300g-1(b)(3)(A).
Determinations to regulate require findings that a contaminant fulfills the three SDWA criteria.\textsuperscript{74} Such findings must be based on the NDOC and other available sources of public health information.\textsuperscript{75} Once the Administrator determines that a given contaminant will be regulated, the Administrator must propose a Maximum Contaminant Level Goal (MCLG) and an NPDWR within twenty-four months.\textsuperscript{76} MCLGs must be set at the level at which there are no known or anticipated adverse health effects and should provide a margin of safety for the most vulnerable populations.\textsuperscript{77} The EPA must set MCLs as close to the MCLG as feasible,\textsuperscript{78} considering costs and the best technology and treatment techniques available.\textsuperscript{79}

When proposing an NPDWR that specifies an MCL, and any alternative MCLs under consideration, the Administrator must analyze and seek public comment on the following seven factors:

1) Quantifiable and non-quantifiable health risk reduction benefits for which there is evidence to conclude such benefits are likely to occur as a result of compliance with each level;
2) Quantifiable and non-quantifiable health risk reduction benefits for which there is evidence to conclude such benefits are likely to occur from reduction in co-occurring contaminants that may reasonably be attributed to compliance with the MCL;
3) Quantifiable and non-quantifiable costs for which there is evidence to conclude such costs are likely to occur solely as a result of compliance with the MCL and monitoring requirements;
4) Incremental costs and benefits associated with alternative MCLs;
5) Effects of the contaminant on the general population and on vulnerable subgroups;
6) Increased health risks that may occur as a result of compliance, including the risk of co-occurring contaminants; and
7) Any other relevant factors, including the quality and extent of information used for the above analyses.\textsuperscript{80}

\textsuperscript{74} Id. § 300g-1(b)(1)(A).
\textsuperscript{75} Id. § 300g-1(b)(1)(B)(ii)(II).
\textsuperscript{76} Id. § 300g-1(b)(1)(E).
\textsuperscript{77} Id. § 300g-1(b)(4)(A).
\textsuperscript{78} Id. § 300g-1(b)(4)(B).
\textsuperscript{79} Id. § 300g-1(b)(4)(D).
\textsuperscript{80} See id. §§ 300g-1(b)(3)(C)(i)(I)–(VII).
The EPA must promulgate a final MCLG and NPDWR within eighteen months of the proposal.\textsuperscript{81} Perchlorate regulation follows this process, complex as it may be.

B. \textit{Perchlorate Regulation Under the SDWA}

Analyzing perchlorate regulation requires an understanding of how perchlorate operates in the body and the potential health risks, as well as an understanding of the myriad sources of perchlorate exposure, and finally a survey of the regulatory process to-date. Perchlorate competitively inhibits iodide uptake in the thyroid through higher affinity bonding with the sodium iodide symporter and may lead to hypothyroidism or other thyroid disruptions.\textsuperscript{82} Some water sources contain naturally occurring perchlorate, but it is more commonly found near industrial sites manufacturing explosives.\textsuperscript{83} Perchlorate exposure often occurs through food ingestion.\textsuperscript{84} Beginning in 1998, the EPA has monitored perchlorate concentrations through UCMR data and announced a preliminary decision to not regulate in October 2008.\textsuperscript{85} In February 2011, the EPA announced a regulatory determination that perchlorate regulation presents a meaningful opportunity to reduce public health risks and thereby began the process of regulatory promulgation.\textsuperscript{86} A final regulation should be promulgated by February 11, 2013, twenty-four months after the official determination to regulate.\textsuperscript{87}

1. Health Effects of Perchlorate

\textsuperscript{81} The deadline may be extended by nine months through notice in the Federal Register. \textit{Id.} § 300g-1(b)(1)(E).
\textsuperscript{83} AWWA Perchlorate, \textit{supra} note \_.
\textsuperscript{85} \textit{Id.}
Perchlorate is a naturally occurring and man-made anion that is used to form a variety of salts. Although primarily used as an oxidizer in solid rocket fuel and other propellants, perchlorate can also be found in fireworks, common explosives, bleach, some fertilizers, and airbag inflation devices. Unrelated to its industrial uses, perchlorate has been used successfully to treat hyperthyroidism. For non-hyperthyroidic individuals, perchlorate may disrupt the thyroid's ability to produce hormones needed for normal growth and development, especially in pregnant women, young children, and developing fetuses. Individuals with a lower iodine intake, especially women, seem to be more susceptible to these issues. Iodine deficiency, and conditions that prevent the use of iodine in making thyroid hormone, can lead to a decrease of thyroid hormone circulating in the blood and manifest in symptoms of hypothyroidism.

Public health concerns involving perchlorate exposure focus exclusively on thyroid function. Properly functioning thyroid glands remove iodide from the oxygenated bloodstream and concentrate the iodide anion in the processes of hormone synthesis and storage. Iodide is

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90 AWWA Perchlorate, supra note 88.
91 See Ann F. Godley & John B. Stanbury, Preliminary Experience in the Treatment of Hyperthyroidism with Potassium Perchlorate, 14 J. CLINICAL ENDOCRINOLOGY & METABOLISM 70, 70 (Jan. 1954) (discussing how perchlorate has been used to treat hyperthyroidism).
92 See EPA Perchlorate, supra note 89; AWWA Perchlorate, supra note 88.
94 Id.
95 Perchlorate and Health, PERCHLORATE INFORMATION BUREAU, http://perchlorateinformationbureau.org/content/perchlorate-and-health.
an essential component of two thyroid hormones, T3 and T4, and therefore the transfer of iodide from the blood to the thyroid is an essential step in this synthesis.\textsuperscript{97} The sodium iodide symporter (NIS) molecule governs iodide transport from the blood into the thyroid.\textsuperscript{98} NIS molecules bond tightly with iodide and with high affinity, but they will also bind and transport similarly shaped and electrically charged molecules, such as perchlorate.\textsuperscript{99} NIS has a higher affinity for perchlorate and other similar substances than for iodide.\textsuperscript{100} Perchlorate competitively inhibits iodide transfer into the thyroid via NIS molecules and may thus interfere with normal thyroid function.\textsuperscript{101} Iodide transport inhibition can result in an intrathyroidal iodide deficiency, leading to a decrease in T4 and T3 production owing to lack of iodide availability.\textsuperscript{102}

Thyrotropin, the thyroid-stimulating hormone produced by the anterior pituitary gland, stimulates thyroid function.\textsuperscript{103} T4, T3, and thyrotropin create something akin to a feedback loop, such that T4 and T3 inhibit thyrotropin secretion and thereby decrease the production of NIS molecules.\textsuperscript{104} Iodide deficiency interferes with this feedback loop and stimulates production of NIS independent of thyrotropin levels.\textsuperscript{105} To maintain blood serum levels of thyroid hormones, the body compensates for low-level iodide deficiency through increased thyrotropin secretion and the subsequent increase in T4 and T3 production.\textsuperscript{106} Generally, the body compensates for iodide deficiency and individuals have no clinical consequences or abnormalities, that is, they

\textsuperscript{98} Id. at 37.
\textsuperscript{99} Id. at 38.
\textsuperscript{100} Id.
\textsuperscript{101} Id.
\textsuperscript{102} Id.
\textsuperscript{103} Id. at 39.
\textsuperscript{104} Id.
\textsuperscript{105} Id.
\textsuperscript{106} Id. at 48.
maintain normal blood serum levels of T4 and thyrotropin, and the thyroid does not become enlarged.\textsuperscript{107}

Hypothyroidism, of varying degrees, results from continued and severe iodide deficiency or other thyroidic perturbations.\textsuperscript{108} While sustained changes in T4 and thyrotropin secretion may result in thyroid hypertrophy and hyperplasia,\textsuperscript{109} thyroid hormone production must fall and remain substantially low for a prolonged period before adverse effects occur.\textsuperscript{110} Subclinical hypothyroidism generally presents asymptptomatically and may be found in 4–8.5\% of adults in the United States.\textsuperscript{111}

Studies of perchlorate’s effects have been mixed, with one study showing no effect on blood serum hormone levels and another identifying such effects.\textsuperscript{112} The National Research Council, in their 2005 survey of available perchlorate/thyroid research, concluded that the available epidemiologic evidence did not support a causal link between perchlorate exposure and congenital hypothyroidism, changes in thyroid function in healthy newborns, or thyroid disorders in adults.\textsuperscript{113}

2. Sources and Occurrence of Perchlorate

\textsuperscript{107} \textit{Id.} at 48–49.
\textsuperscript{108} \textit{Id.} at 49. Hypothyroidism may be termed subclinical, overt, primary, or central (pituitary), and may be permanent, transient, congenital or acquired. \textit{Id.} at 49–50. The varying subtypes classify hypothyroidism of varying degrees and resultant from differing causes. \textit{Id.}
\textsuperscript{110} NAT’L RESEARCH COUNCIL \textit{supra} note 91.
\textsuperscript{111} Martin I. Surks et al., \textit{Subclinical Thyroid Disease: Scientific Review and Guidelines for Diagnosis and Management}, 291 J. AM. MED. ASS’N 228, ____ (Jan. 2004). Subclinical thyroidism can also be found in 2.5\% of pregnant women, a number statistically lower than the prevalence in the general population. R. Z. Klein et al., \textit{Prevalence of Thyroid Deficiency in Pregnant Women}, 35 CLINICAL ENDOCRINOLOGY 41, ____ (1991).
\textsuperscript{112} See 73 Fed. Reg. at 60,266 (citing Amitai and Blount, respectively).
\textsuperscript{113} NAT’L RESEARCH COUNCIL \textit{supra} note 60 at 109–11.
Multiple sources contribute to human intake or ingestion of perchlorate.\textsuperscript{114} Human exposure occurs by drinking water or eating food that contains perchlorate, or by working in manufacturing areas that include production of perchlorate-containing products.\textsuperscript{115} Highly water-soluble, perchlorate may enter water through natural or undefined sources.\textsuperscript{116} Perchlorate may also be found in proximity to sites where solid rocket fuel is used or manufactured.\textsuperscript{117}

A full and fair assessment of perchlorate exposure necessarily considers exposure from sources other than drinking water, that is, relative source contributions.\textsuperscript{118} The EPA primarily used two studies to evaluate dietary source contributions to perchlorate exposure.\textsuperscript{119} Combining data from the two studies, the EPA determined that pregnant women at the ninetieth percentile of food-source perchlorate intake were at the greatest risk for perchlorate contamination through drinking water.\textsuperscript{120}

3. Regulatory History of Perchlorate

\textsuperscript{114} Nat’l Ctr. for Envtl. Health, supra note 38.
\textsuperscript{115} Id.
\textsuperscript{116} AWWA Perchlorate, supra note 88.
\textsuperscript{117} Id.
\textsuperscript{119} Id. The first study, the \textit{Total Diet Study}, U.S. FOOD AND DRUG ADMINISTRATION, http://www.fda.gov/Food/FoodSafety/FoodContaminantsAdulteration/TotalDietStudy/default.htm (last updated Feb. 27, 2012), used nationwide sampling and analysis of a large variety of food items and nationwide surveys of food intake to estimate dietary-source exposure rates for myriad demographics in the U.S. The second study involved EPA and Centers for Disease Control analysis of the National Health and Nutrition Examination Survey, \textit{National Health and Nutrition Examination Survey Homepage}, CENTERS FOR DISEASE CONTROL, http://www.cdc.gov/nchs/nhanes.htm (last updated Dec. 19, 2012). This analysis combined survey data and UCMR monitoring to estimate perchlorate exposure from food and water sources. 73 Fed. Reg. at 60,271.
\textsuperscript{120} 73 Fed. Reg. at 60,277.
Perchlorate appeared on the first CCL (CCL 1) in 1998. Preliminary regulatory decisions for CCL 1 were announced on June 3, 2002, and perchlorate was not on the list for potential regulation. The EPA announced formal regulatory decisions for CCL 1 contaminants on July 18, 2003. A draft of the second CCL (CCL 2) appeared in April 2004, and again included perchlorate. The final list was published ten months later, in February 2005.

In January 2006, the EPA issued guidance under the National Oil and Hazardous Substances Contingency Plan—for protective measures and potential cleanup levels—at a preliminary goal of 24.5 micrograms per liter, or 24.5 parts per billion.

The EPA published preliminary regulatory determinations for eleven contaminants on May 1, 2007. While the EPA did not publish a regulatory determination for perchlorate at that time, the notice did mention that making such a determination was a high priority. As of the

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122 See Announcement of Preliminary Regulatory Determinations for Priority Contaminants on the Drinking Water Contaminant Candidate List, 67 Fed. Reg. 38,222, 38,228 (June 3, 2002) (listing the nine contaminants to be regulated at the time: perchlorate was not one of them); CCL 1, supra note 42 (listing contaminants on the first CCL, not including perchlorate); see also 73 Fed. Reg. at 60,264 (discussing history of perchlorate regulation).
123 Announcement of Regulatory Determinations for Priority Contaminants on the Drinking Water Contaminant Candidate List, 68 Fed. Reg. 42,898 (July 18, 2003); CCL 1, supra note 42; see also 73 Fed. Reg. at 60,264 (discussing history of perchlorate regulation).
2007 notice, the EPA needed more information to make an adequate determination of whether perchlorate regulation was appropriate under the SDWA.\textsuperscript{129} Specifically, the EPA needed more information about perchlorate exposure and whether regulation would present a meaningful opportunity for public health risk reduction.\textsuperscript{130}

Final determinations for the eleven contaminants were published on July 30, 2008,\textsuperscript{131} and a preliminary regulatory determination for perchlorate came in October of the same year.\textsuperscript{132} In October 2008, the EPA made a “preliminary regulatory determination . . . that a national primary drinking water rule [was] not necessary for perchlorate because a national primary drinking water regulation would not provide a meaningful opportunity to reduce health risk.”\textsuperscript{133} To make such a determination, the EPA had to evaluate the other two SDWA requirements for proper regulation, and found that, at sufficiently high doses, perchlorate “may have an adverse effect on the health of persons,”\textsuperscript{134} and that it “occurs infrequently at levels of public health concern in public water systems.”\textsuperscript{135}

In 2009, the Office of Water for the EPA published an Interim Drinking Water Health Advisory for Perchlorate with a health advisory level of 15 parts per billion.\textsuperscript{136} In accordance with the statute, the EPA then accepted public comment, specifically on the use of science in a regulatory determination and whether perchlorate regulation would present a meaningful

\textsuperscript{129} \textit{Id.}
\textsuperscript{130} \textit{Id.}
\textsuperscript{131} 73 Fed. Reg. 44251; see also 73 Fed. Reg. 60262, 60264 (discussing history of perchlorate regulation).
\textsuperscript{132} Preliminary Regulatory Determination on Perchlorate, 73 Fed. Reg. 60262.
\textsuperscript{133} \textit{Id.} at 60265.
\textsuperscript{134} \textit{Id.} at 60274.
\textsuperscript{135} \textit{Id.} at 60275.
opportunity to reduce public health risks.\textsuperscript{137} Individuals and stakeholders submitted more than six thousand comments on the 2009 notice, largely focused on alternative methods of assessing whether potential perchlorate regulation would offer a meaningful opportunity to reduce public health risks.\textsuperscript{138}

On February 11, 2011, the EPA announced its Regulatory Determination on Perchlorate and found that perchlorate regulation presents a meaningful opportunity for health risk reduction, that perchlorate exposure may have adverse health effects, and that perchlorate occurs with sufficient frequency at levels of public health concern to justify initiating the process of proposing a perchlorate NPDWR.\textsuperscript{139}

The health effect that the EPA referred to is iodide uptake inhibition, which is considered a biochemical precursor event.\textsuperscript{140} The first adverse health effect of perchlorate exposure, according to the National Research Council of the National Academy of Sciences, is hypothyroidism.\textsuperscript{141} In terms of frequency, the EPA adjusted its analysis for the 2011 regulatory decision. Although the HRL derived by the EPA in 2008 was 15 parts per billion, a level considered to be protective of the most sensitive populations, the EPA used multiple HRLs for the 2011 determination that reversed the October 2008 preliminary determination.\textsuperscript{142} Fewer than forty-five of the 3,865 samples PWSs had perchlorate detections at the 15 parts per billion level.

\textsuperscript{137} 76 Fed. Reg. 7762, 7763 (Feb. 11, 2011). The EPA published a response to comment document and the public comments to the 2009 notice. This information is available at \url{http://www.regulations.gov} with a Docket ID number of EPA-HQ-OW-2009-0297.
\textsuperscript{138} \textit{Id.}; see also \textit{Drinking Water: Perchlorate Supplemental Request for Comments, REGULATIONS.GOV, \url{http://www.regulations.gov/#!docketDetail;D=EPA-HQ-OW-2009-0297} (last visited Dec. 20, 2012).
\textsuperscript{139} Regulatory Determination on Perchlorate, 76 Fed. Reg. 7762, 7765.
\textsuperscript{140} 76 Fed. Reg. 7762, 7763.
\textsuperscript{141} 73 Fed. Reg. 60262, 60266; see \textit{NATIONAL RESEARCH COUNCIL, HEALTH IMPLICATIONS OF PERCHLORATE INGESTION}, EPA (2005).
\textsuperscript{142} 76 Fed. Reg. 7762, 7765.
during the collection of UCMR 1.\textsuperscript{143}

Based on the statutory time limitations, an MCLG and an NPDWR for perchlorate are
due by February 11, 2013: twenty-four months after the official determination to regulate.\textsuperscript{144}

WHEN THE REGULATION COMES OUT IN FEBRUARY – OR IS DELAYED –
UPDATE THIS.

C. Constitutionality of the SDWA

When Congress passes a law, it must explicitly or implicitly be exercising its allotted
authority under the Constitution and be operating within those bounds.\textsuperscript{145} The SDWA
presumably invokes Commerce Clause authority teamed with the Necessary and Proper
Clause.\textsuperscript{146} The Tenth Amendment cabins Article I authority, and any exercise thereof must
comply with federalist principles and the vertical separation of powers.\textsuperscript{147} One of the powers
reserved to the states is the police power to regulate for the public health.\textsuperscript{148} Regulating for the
public health is the same purpose espoused by legislators for enacting the SDWA.\textsuperscript{149}

1. The Commerce Clause

Powers and limitations of the federal government are laid out in the Constitution. For
the houses of Congress, Article I governs.\textsuperscript{150} Article I outlines the composition and election
of both houses, vests the legislative powers of the United States, and outlines specific powers

\textsuperscript{143} 76 Fed. Reg. 7762, 7764; see also Occurrence Data: Accessing Unregulated Contaminant
Monitoring Data, supra note _____.
\textsuperscript{144} § 300g-1(b)(1)(E).
\textsuperscript{146} See Nebraska, 331 F.3d at 998 (inferring that, because several PWSs may sell drinking water
over state lines, the authority for the statute derived from the Commerce Clause).
\textsuperscript{147} Hammer v. Dagenhart, 247 U.S. 251, 274 (1918), overruled in part by United States v. Darby,
312 U.S. 100, 116–17 (1941).
\textsuperscript{148} Jacobsen v. Massachusetts, 197 U.S. 11, 25 (1905).
\textsuperscript{150} See U.S. CONST. art. I, § 8 (enumerating the powers of Congress); U.S. CONST. amend. X
(reserving to the states and the people all powers not given to Congress in the Constitution).
of the Congress, including the ability to borrow funds on behalf of the United States, establish
procedures of naturalization, and declare war, amongst other specifically enumerated grants of
power.\footnote{See generally U.S. Const. art. I.} Article I specifically prohibits certain powers to the Congress, including the inability to
legislate retroactively, to tax state exports, or to grant titles of nobility, among others.\footnote{See generally U.S. Const. art. I, § 9.}

Potentially the two most well-known Article I powers are the Commerce Clause\footnote{U.S. Const. art. I, § 8, cl. 3.} and
the Necessary and Proper Clause.\footnote{U.S. Const. art. I, § 8, cl. 18.} The Necessary and Proper Clause allows Congress “[t]o
make all Laws which shall be necessary and proper for carrying into Execution the foregoing
Powers, and all other Powers vested . . . in the Government of the United States . . . .”\footnote{U.S. Const. art. I, § 8, cl. 18.} Under
the Commerce Clause, Congress has the power “[t]o regulate commerce with foreign Nations,
and among the several States, and with the Indian Tribes.”\footnote{U.S. Const. art. I, § 8, cl. 3.} Teamed together, the two clauses
provide a powerful foundation for most federal regulation.\footnote{See, e.g., Gonzales v. Raich, 545 U.S. 1, 34 (2005) (Scalia, J., concurring) (discussing
the interaction of the Commerce Clause and the Necessary and Proper Clause with regard to
interstate and intrastate regulation); United States v. Lopez, 514 U.S. 549, 588 (1995) (Thomas,
J., concurring) (asserting that Commerce Clause authority added to Necessary and Proper clause
authority renders other enumerated powers superfluous); New York v. United States, 505 U.S.
144, 158–59 (1992) (noting that the Court’s “broad construction of . . . [the Commerce Clause]
has . . . been guided . . . by the Constitution’s Necessary and Proper Clause”).}

The Commerce Clause enjoys extensive current and historical treatment in legal
scholarship and case law.\footnote{A quick WestlawNext search of secondary sources for “commerce clause” returns 9,980 law
review and journal articles on the varying aspects of the subject. A similar search of all state
and federal case material returns more than 10,000 cases dealing with the Commerce Clause, of
which 550 are Supreme Court cases.} Much of the relevant treatment relates to the definitions of
“commerce,”\textsuperscript{159} or “affecting commerce,”\textsuperscript{160} and “among the States.”\textsuperscript{161} Modern case law evinces “three broad categories of activity” that Congress may properly regulate under the Commerce Clause.\textsuperscript{162} First, regulation is proper when it regards the channels used for interstate commerce, such as navigable waters.\textsuperscript{163} Second, Congress may regulate the instrumentalities, people, and things involved in interstate commerce, even when such things have an intrastate character.\textsuperscript{164} Third, Commerce Clause authority extends to regulating “those activities having a \textit{substantial} relation to interstate commerce.”\textsuperscript{165}

\textsuperscript{159} \textit{See}, e.g., Gibbons v. Ogden, 22 U.S. 1, 3 (1824) (“commerce” includes traffic, navigation, transportation of goods); N.L.R.B. v. Jones & Laughlin Steel Corp., 301 U.S. 1, 31 (1937) (defining commerce as “trade, . . . transportation, or communication among the several States . . .”) (quoting the National Labor Relations Act, now found at 29 U.S.C.A. § 152(6) (West, Westlaw through Dec. 7, 2012)); City of Philadelphia v. New Jersey, 437 U.S. 617, 622 (1978) (stating that no “objects of interstate trade” are excluded by the definition of commerce).

\textsuperscript{160} \textit{See}, e.g., \textit{N.L.R.B}., 301 U.S. at 31 (defining “affecting commerce” as “in commerce, or burdening or obstructing commerce or the free flow of commerce, or having led or tending to lead to a . . . burdening or obstructing [of] commerce or the free flow of commerce”) (quoting the National Labor Relations Act, now found at 29 U.S.C.A. § 152(7) (West, Westlaw through Dec. 7, 2012)); Nat’l Fed’n of Indep. Bus. v. Sebelius (The ACA), 132 S. Ct. 2566, 2578–79 (2012) (listing activities that have been said to “substantially affect interstate commerce,” including “a farmer’s decision to grow wheat” and “a loan shark’s extortionate collections from a neighborhood butcher shop”) (internal references omitted).

\textsuperscript{161} \textit{See}, e.g., Wickard v. Filburn, 317 U.S. 111, 123–25 (1942) (interstate commerce includes those intrastate activities that directly affect interstate commerce); United States v. E.C. Knight Co., 156 U.S. 1, 16–17 (1895) (interstate commerce does not include manufacturing because it is a purely intrastate activity); \textit{see also} Swift & Co. v. United States, 196 U.S. 375, 398 (1905) (stating that “commerce among the states is not a technical legal conception, but a practical one, drawn from the course of business).

\textsuperscript{162} United States v. Lopez, 514 U.S. 549, 558 (1995) (citing Perez v. United States, 402 U.S. 146, 150 (1971)); \textit{see also} \textit{The ACA}, 132 S. Ct. at 2578 (noting the three categories of proper regulation); \textit{Raich}, 545 U.S. at 16–17 (discussing the three categories of Commerce Clause regulation).

\textsuperscript{163} \textit{The ACA}, 132 S. Ct. at 2578; \textit{Raich}, 545 U.S. at 16–17; \textit{Lopez}, 514 U.S. at 558.

\textsuperscript{164} \textit{The ACA}, 132 S. Ct. at 2578; \textit{Lopez}, 514 U.S. at 558; \textit{see also} Perez v. United States, 402 U.S. 146, 150 (1971) (listing the category of regulation and providing examples).

\textsuperscript{165} \textit{Lopez}, 514 U.S. at 558–59 (emphasis added); \textit{see also} \textit{The ACA}, 132 S. Ct. at 2578 (stating the same category); \textit{Raich}, 545 U.S. at 16–17 (same); \textit{Perez}, 402 U.S. at 150 (same).
Modern cases deal almost exclusively with the third category, as it is the hardest to define.\textsuperscript{166} Activities held to have a substantial relation to interstate commerce include growing wheat for personal use,\textsuperscript{167} the intrastate price of milk,\textsuperscript{168} and local extortion.\textsuperscript{169} While the Commerce Clause authority has expanded over the last hundred years, not all instances of its exercise have been upheld.\textsuperscript{170} In \textit{United States v. Lopez}, for example, the Court struck down a federal provision criminalizing the possession of a gun in a school zone because it had no connection to even the broadest definition of commerce.\textsuperscript{171} The Court further noted that the statute lacked a jurisdictional hook that would ensure, on a case-by-case basis, that gun possession in the school zone actually impacted interstate commerce.\textsuperscript{172}

2. The Necessary and Proper Clause

Jurisprudence related to the Necessary and Proper Clause remains somewhat sparse. The most recent case directly analyzing the clause is \textit{United States v. Comstock}.\textsuperscript{173} \textit{Comstock} involved federal civil-commitment for the detainment of mentally ill sex-offenders, beyond the

\textsuperscript{166} \textit{Perez}, 402 U.S. at 150 (stating that the case concerned only the third category).
\textsuperscript{167} Wickard v. Filburn, 317 U.S. 111, 127–29 (1942) (upholding limits on personal wheat production as part of interstate commerce).
\textsuperscript{168} United States v. Wrightwood Dairy Co., 315 U.S. 110, 119 (stating that Congress could regulate the price of intrastate milk under the Commerce Clause).
\textsuperscript{169} \textit{Perez}, 402 U.S. at 155 (stating that a congressional finding that local loansharking impacts national credit markets constituted a rational basis for federal power under the Commerce Clause).
\textsuperscript{170} See generally \textit{Lopez}, 514 U.S. at 552–61 (describing development of Commerce Clause case history).
\textsuperscript{171} 514 U.S. at 560–62.
\textsuperscript{172} \textit{Id.} This seems to suggest that regulation or legislation otherwise beyond the ambit of federal authority under the Commerce Clause can be made proper when it contains a jurisdictional hook ensuring implications of interstate commerce on a case-by-case basis. The \textit{Lopez} Court cites to \textit{United States v. Bass}, 404 U.S. 336 (1971), for an instance of judicial interpretation implying the required connection to interstate commerce when the statute was otherwise ambiguous. \textit{Id.} at 562.
\textsuperscript{173} 130 S. Ct. 1949 (2010).
end of their incarceration.\textsuperscript{174} The question to the Court was whether the Necessary and Proper Clause granted adequate authority to enact the statute.\textsuperscript{175} Upholding Congress’s authority to enact the statute using the Necessary and Proper Clause, the Court noted five considerations for the exercise of that authority.\textsuperscript{176} The five considerations were: “breadth of the Necessary and Proper Clause”; the “history of federal involvement” in the subject matter; the government’s interest in the statute; the balancing of state and federal interests in the statute; and “the statute’s narrow scope.”\textsuperscript{177}

Far from utilizing arbitrary considerations to uphold the statute, the \textit{Comstock} Court evaluated more than two hundred years of case law.\textsuperscript{178} The Necessary and Proper Clause offers Congress broad authority to legislate.\textsuperscript{179} “Necessary” has not been held to mean “absolutely necessary,” but rather an exercise of power using appropriate and adapted means to a legitimate end, not otherwise prohibited by the Constitution.\textsuperscript{180} Exercise of this authority requires a “means-end rationality”\textsuperscript{181} analysis addressing “whether the means chosen are ‘reasonably adapted’ to the attainment of a legitimate end.”\textsuperscript{182}

\textsuperscript{174} Id. at 1954.
\textsuperscript{175} Id. at 1956.
\textsuperscript{176} Id. at 1965. The Court expressly declined to reach any due process concerns in this case. Id.
\textsuperscript{177} Id.
\textsuperscript{178} Id. at 1956–65.
\textsuperscript{179} Id. at 1956; \textit{see} McCulloch v. Maryland, 4 Wheat. 316, 408 (1819) (stating that a government entrusted with enumerated powers must be given broad means to execute those powers).
\textsuperscript{180} \textit{McCulloch}, 4 Wheat. at 421; \textit{see also} Jinks v. Richland County, 538 U.S. 456, 462 (2003) (reemphasizing that the Necessary and Proper Clause does not require the congressional act to be “absolutely necessary”).
\textsuperscript{181} Sabri v. United States, 541 U.S. 600, 605 (2004).
\textsuperscript{182} Gonzales v. Raich, 545 U.S. 1, 37 (2005) (quoting United States v. Darby, 312 U.S. 100, 121 (1941)); \textit{see also} \textit{Comstock}, 130 S. Ct. at 1956–57 (incorporating the prior jurisprudence into the Court’s analysis for the first consideration under the Necessary and Proper Clause).
Historical involvement by the federal government does not inherently support or undermine the constitutionality of a proposed congressional statutory scheme.\(^{183}\) Rather than bearing on the constitutionality of a congressional act, legislative history bears on the "reasonableness of the relation" between a new or proposed scheme and existing government interests.\(^{184}\) Further, the federal interest at stake in the congressional scheme must not contravene the letter or spirit of the constitution.\(^{185}\) Part of this constitutional-end analysis includes balancing state and federal domains of power.\(^{186}\) Finally, the Court consistently cautions against upholding statutes too attenuated from an explicit Article I power.\(^{187}\)

3. The Tenth Amendment

Where the Commerce Clause grants Congress expansive authority to regulate instances of interstate commerce,\(^{188}\) the entirety of Article I powers are limited by the Tenth

\(^{183}\) *Comstock*, 130 S. Ct. at 1958; *Raich*, 545 U.S. at 21 (noting that a history of federal involvement can be helpful in assessing the substance of the congressional scheme) *see also* *Walz v. Tax Comm’n of City of New York*, 397 U.S. 664, 678 (1970) ("[N]o one acquires a vested or protected right in violation of the Constitution by long use"); *cf. United States v. Morrison*, 529 U.S. 598, 612–14 (2000) (stating that a history of federal involvement is neither necessary nor sufficient when evaluating exercise of Article I authority).

\(^{184}\) *Comstock*, 130 S. Ct. at 1958.

\(^{185}\) *See McCulloch*, 4 Wheat. at 421 (noting that a statute must “not [be constitutionally] prohibited”).

\(^{186}\) *Comstock*, 130 S. Ct. at 1962. The Court tests the statute against the Tenth Amendment, discussed *infra* in Subsection II.C.3.

\(^{187}\) *See, e.g.*, *Comstock*, 130 S. Ct. at 1963 (stating that the link between the federal civil-commitment statute at issue and the enumerated power was not “too attenuated”); *United States v. Lopez*, 514 U.S. 549, 567 (1995) (cautioning against "piling [ing] inference upon inference” in upholding congressional actions).

\(^{188}\) Notably, the recent decision in *The ACA* case placed a check on congressional exercise of the Commerce Clause. 132 S. Ct. 2566, 2591 (2012). With regard to the individual mandate, the Court held that “[t]he proximity and degree of connection between the mandate and the subsequent commercial activity is too lacking to justify [federal legislation].” *Id.* It remains unclear how the new check on Commerce Clause power will impact future jurisprudence in the area.
Amendment.\textsuperscript{189} Federalist principles built into the Constitution reserve the police power to the States.\textsuperscript{190} The police power includes the authority of States to regulate for the protection of public health within their territory.\textsuperscript{191}

The Tenth Amendment states simply that “[t]he powers not delegated to the United States by [the] Constitution, nor prohibited by it to the States, are reserved to the States, respectively, or to the people.”\textsuperscript{192} Described both as “a tautology”\textsuperscript{193} and slightly differently as a positive expression of the limits on federal power,\textsuperscript{194} the Tenth Amendment affirmatively states that federal power has limits and the States retain a degree of sovereignty.\textsuperscript{195}

One such area of sovereignty is the so-called police power.\textsuperscript{196} In 1905, the Supreme Court affirmed that the police power was not surrendered to the federal government as part of

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\textsuperscript{189} Hammer v. Dagenart, 247 U.S. 251, 274 (1918), overruled in part by United States v. Darby, 312 U.S. 100, 116–17 (1941) (“[t]he grant of authority over a purely federal matter was not intended to destroy the local power always existing and carefully reserved to the states in the Tenth Amendment”).
\textsuperscript{190} See U.S. CONST. amend. X (reserving to the states or the people those powers not explicitly granted to the federal government); The ACA, 132 S. Ct. at 2578 (reiterating that the police power is “possessed by the States but not by the Federal Government”).
\textsuperscript{191} Hillsborough Cnty. v. Automated Med. Labs., Inc., 471 U.S. 707, 719 (1985) (“regulation of health and safety matters is primarily, and historically, a matter of local concern”); Jacobson v. Massachusetts, 197 U.S. 11, 25 (1905); see The ACA, 132 S. Ct. at 2578 (explaining that the police power is a “general power [to] govern[]” that includes many “vital functions of modern government”).
\textsuperscript{192} U.S. CONST. amend. X.
\textsuperscript{193} New York v. United States, 505 U.S. 144, 157 (1992); see also United States v. Darby, 312 U.S. 100, 124 (1941) (stating that the Tenth Amendment “states but a truism” and that “nothing in the history of its adoption . . . suggest[s] that it was more than declaratory of the relationship between the national and state governments”).
\textsuperscript{194} The ACA, 132 S. Ct. at 2578 (quoting THE FEDERALIST NO. 45, at 293 (James Madison)); Koog v. United States, 79 F.3d 452, 455 (5th Cir. 1996).
\textsuperscript{195} See The ACA, 132 S. Ct. at 2578 (stating that the police power resides with the States and the Federal Government has no such power); New York, 505 U.S. at 156 (positing that congressional power is restrained by the Tenth Amendment).
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the Constitution.\textsuperscript{197} Though lacking any definite limits, the police power includes the “distinctly recognized authority of a state to enact … ‘health laws of every description…’”\textsuperscript{198} Phrased differently, the States retain the power to enact reasonable regulations to protect and promote public health and safety.

Recent Supreme Court jurisprudence shows a continuing line of cases that hold the Tenth Amendment prohibits the federal government from commanding States to act, or commandeering State officials to enforce a federal regulatory program.\textsuperscript{199}

D. SDWA Case Law and Scholarship

There exists little case law or scholarship relating to the SDWA, and none specifically addressed to perchlorate. Several cases challenged the SDWA on constitutional grounds and met with varying success.\textsuperscript{200}

The leading case with regard to the constitutionality of the SDWA is \textit{Nebraska v. E.P.A.},\textsuperscript{201} in which the State of Nebraska and other petitioners presented a facial challenge to the SDWA. Petitioners argued that the SDWA exceeds congressional authority because it “regulates the intrastate distribution and sale of drinking water.”\textsuperscript{202} The D.C. Circuit noted that a successful facial challenge would require a finding that under “no set of circumstances” would the statute

\textsuperscript{197} \textit{Jacobson}, 197 U.S. at 25.
\textsuperscript{198} \textit{Id.} Later jurisprudence holds the police power to include “punishing street crime, running public schools, and zoning property for development,” \textit{The ACA}, 132 S. Ct. at 2578, and the regulation of land use, Lucas v. South Carolina Coastal Council, 505 U.S. 1003, 1009 (1992), to name a few. For a thorough discussion of the history of the police power, see Santiago Legarre, \textit{The Historical Background of the Police Power}, 9 U. PA. J. CONST. L. 745 (2007).
\textsuperscript{200} See infra notes _____ for a brief discussion of the major cases involving the SDWA, and note _____ for the most relevant scholarship on the topic.
\textsuperscript{201} 331 F.3d 995 (D.C. Cir. 2003).
\textsuperscript{202} \textit{Id.} at 998 (emphasis added).
be constitutional.\textsuperscript{203} Citing to the EPA website,\textsuperscript{204} the court noted that several PWSs sell “substantial volumes of drinking water across state lines.”\textsuperscript{205} Pursuant to the second category of proper congressional regulation under the Commerce Clause, the \textit{Nebraska} court upheld the SDWA because each of the interstate sales of drinking water presented a valid opportunity to exercise the commerce power.\textsuperscript{206} Noting that petitioners failed to meet the burden of a facial challenge to the SDWA, the court declined to address whether the intrastate sale of drinking water has a “sufficiently substantial impact on interstate commerce” to warrant federal regulation.\textsuperscript{207} The court further held that, because the SDWA does not “compel the states to pass legislation or to enforce federal standards . . . [but r]ather . . . regulates the states only in their capacity as public water system owners,” it does not run afoul of federalist principles and therefore comports with the Tenth Amendment.\textsuperscript{208}

The petitioners in \textit{Nebraska} raised constitutional issues specifically with regard to the “Arsenic Rule.”\textsuperscript{209} The court found that those arguments had not been adequately preserved at the agency level.\textsuperscript{210} Judge Randolph agreed that “[a]gencies do not ordinarily have jurisdiction to pass on the constitutionality of federal statutes” and petitioners were not required to raise constitutional questions related to the SDWA directly to the EPA during the administrative

\textsuperscript{203} \textit{Id.} at 998 (citing Amfac Resorts, L.L.C. v. United States Dep’t of Interior, 282 F.3d 818, 826 (D.C. Cir. 2002), \textit{vacated in part on other grounds sub nom.} Nat’l Park Hospitality Ass’n v. Dep’t of Interior, 538 U.S. 803 (2003)).

\textsuperscript{204} To find this information, see the EPA website at \url{http://www.epa.gov/safewater/data/getdata.html}.

\textsuperscript{205} \textit{Nebraska}, 331 F.3d at 998.

\textsuperscript{206} \textit{Id.} at 998 (citing United States v. Lopez, 514 U.S. 549, 558 (1995)).

\textsuperscript{207} \textit{Id.} at 998.

\textsuperscript{208} \textit{Id.} at 997.

\textsuperscript{209} \textit{Id.} at 997. The “Arsenic Rule” can be found at National Primary Drinking Water Regulations; Arsenic and Clarifications to Compliance and New Source Contaminants Monitoring, 66 Fed. Reg. 6976, 6981 (Jan. 22, 2001). The MCLG for arsenic stands at 0 parts per billion, and the “enforceable MCL” is 10 parts per billion. \textit{Id.}

\textsuperscript{210} \textit{Nebraska}, 331 F.3d at 997–98.
phases.\textsuperscript{211} However, because petitioners failed to raise issues related to the Arsenic Rule during the administrative phases and thereby failed to give the EPA an opportunity to hear arguments or fashion a more narrowly tailored rule, those arguments were not preserved and could not be heard on appeal.\textsuperscript{212}

Other cases have challenged specific regulations and have been upheld on varying grounds.\textsuperscript{213} All of these cases have two things in common: first, they are after-the-fact challenges to specific regulations; and second, petitioners consistently argue that the rules are arbitrary and capricious, or fly in the face of existing scientific studies, and are therefore beyond the pale of EPA’s statutory authority under the SDWA.\textsuperscript{214}

In \textit{W.R. Grace & Co. v. EPA},

In terms of scholarship, the in-vogue challenge to the SDWA is on Commerce Clause grounds.\textsuperscript{215} As glossed through in the \textit{Nebraska} case, facial challenges to the SDWA on these grounds have been unsuccessful because the EPA presents data of several PWSs engaging in substantial interstate sales of drinking water.\textsuperscript{216}

\textbf{III. DISCUSSION}

\begin{itemize}
\item \textit{Id.} at 997.
\item \textit{Id.} at 997–98.
\item \textit{See, e.g., W.R. Grace & Co. v. EPA, 261 F.3d 330, 342 (3d Cir. 2001) (challenging cleanup standards related to ammonia regulation); Chlorine Chemistry Co. v. EPA, 206 F.3d 1286, 1291 (D.C. Cir. 2000) (vacating chloroform regulation). In fairness, not all challenges to specific regulations have been upheld. \textit{See, e.g., City of Waukesha v. EPA, 320 F.3d 228, 254 (D.C. Cir. 2003) (upholding radionuclide limits).}
\item \textit{See, e.g., W.R. Grace & Co., 261 F.3d at 342 (deeming the cleanup standard for ammonia to be arbitrary and capricious); Chlorine Chemistry Co., 206 F.3d at 1291 (holding the chloroform MCLG arbitrary and capricious).}
\item \textit{See Garrett W. Johnson, Constitutional Limits to Federal Environmental Regulation: The Commerce Clause Challenge to the Safe Drinking Water Act, 10 QUINNIPIAc HEALTH L.J. 77 (2006) (arguing that the SDWA is beyond the scope of congressional authority under the Commerce Clause).}
\item \textit{Nebraska, 331 F.3d at 999.}
\end{itemize}
In its current incarnation, the SDWA boasts laudable policy objectives, but it oversteps the bounds of congressional authority and is unconstitutional. Implicitly exercising a very broad Commerce Clause authority, the drafters of the SDWA failed to take account of the limiting principles of the Tenth Amendment and exceeded their constitutional authority in granting such unsupervised power to the EPA.

Even if the SDWA itself is a proper execution of congressional authority, the proposed perchlorate regulation does not comply with the Act and is outside the scope of the EPA’s regulatory powers. Regulations must be predicated on adverse effects on human health, not an amorphous “precursor event” as outlined in the perchlorate proposals. Furthermore, perchlorate occurs insufficiently frequently at levels of public health concern, as compared with previous NPDWRs, to warrant regulation.

Ultimately, safe drinking water is something everyone, at every level of government and regardless of political affiliation, can get behind. To bring the policy and the legal limits of authority in line with one another, the SDWA should be revised to be more objective and have a solid, principled framework for the use of scientific studies in determining which contaminants are ripe for regulation and at level to set those limits. The focus of such revisions ought to be addressing the federalist concerns by instituting vertical limits, such that the federal power may only come into play if a threshold number of States and systems would be affected, and on ensuring that the scientific community receives due deference from the regulators.

A. Congress Lacked the Authority to Enact the SDWA
The SDWA purports to exercise Commerce Clause authority, teamed with the Necessary and Proper Clause, to regulate all PWSs. Cases involving the regulatory authority of the SDWA are rare.217

1. The Commerce Clause Argument

ROADMAP PARAGRAPH

The argument in favor of constitutionality is that the Commerce Clause authorizes Congress to regulate commerce between the States, some PWSs engage in interstate activity, and regulation of all PWSs is both necessary and proper to give effect to the legislative goal of delivering safe drinking water across state lines.218 The Commerce Clause teamed with the Necessary and Proper Clause as a justification for the SDWA fails by parity of reasoning and because of limitations imposed by the police power.

In the text of the SDWA, the drafters clearly recognized that federal authority to regulate contaminants in drinking water could not extend to the use of private wells or the sale of water by a “system” with fewer than twenty-five regular customers or fewer than fifteen connections.219 More than fifteen million households in the United States regularly rely on private wells for drinking water.220 It remains unclear how many individuals regularly use well water, but the number of household well users is approximately fifteen percent that of PWS users.221 Fifteen percent of the market in groundwater opting out of the commercial market

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217 Examples include Nebraska v. EPA, 331 F.3d 995 (D.C. Cir. 2003) (challenging the MCL for arsenic), Neb. ex rel Stenberg v. United States, 238 F.3d 946 (8th Cir. 2001) (challenging the constitutionality of the SDWA and dismissed for failure to file in D.C. Circuit court per § 300j-7 of the statute).
218 See Nebraska v. EPA, 331 F.3d 995, 998 (D.C. Cir. 2003).
219 § 300f(4).
221 Id.
surely rises to the level of having a substantial effect on interstate commerce.\textsuperscript{222}

More on \textit{Wickard}? Maybe?

Develop out the police power argument re: \textit{Jacobson}, etc.

2. How the Tenth Amendment and Federalism Cabin Commerce Clause Authority

No scholarship exists, and no court has thoroughly treated, the potential Tenth Amendment challenges to the SDWA, or how federalist principles bear on and limit Commerce Clause authority with regard to legislation and regulation that involves specific governance under the police power. The police power, a power reserved explicitly to the States,\textsuperscript{223} traditionally includes the power to regulate for the protection of public health and safety within a State’s territory.\textsuperscript{224}

The SDWA, clearly designed to authorize federal regulation for protection of the public health, runs headlong into the federalist principles of the Tenth Amendment and the police power. As the Tenth Amendment is exactly that, an Amendment that modifies the entire foregoing constitution, including the Article I Commerce Clause, congressional authority under the Commerce Clause is logically limited by federalist principles.

DEVELOP THIS IDEA FURTHER – HOW DOES THE 10\textsuperscript{TH} WORK?

B. \textit{Perchlorate Regulation is Improper}

ROADMAP PARAGRAPH

Assuming for the sake of argument that the SDWA is constitutional and a proper grant of authority to the EPA, the proposed perchlorate regulation does not conform to the statute and is beyond the pale of EPA’s regulatory authority. The administrative history of perchlorate

\textsuperscript{222} cite to \textit{Wickard} – pretty much the same idea as growing wheat for personal consumption
\textsuperscript{223} U.S. CONST. amend. X.
\textsuperscript{224} Jacobsen v. Massachusetts, 197 U.S. 11, 25 (1905).
regulation evinces the arbitrary and capricious nature of said regulation under the statute.\textsuperscript{225}

There are two main issues with the current perchlorate regulation proceedings and the precedential value that such regulation will carry. First, the use of a biochemical “precursor event,” as opposed to the “adverse health effect” required by the SDWA, sets a less rigorous regulatory precedent and does not conform to statutory requirements.\textsuperscript{226} Second, the EPA seems to have changed its mind as to what constitutes perchlorate occurrence with sufficient frequency and at levels of public health concern, and this shifting definition is unsupported by the UCMR date or the health advisory levels.\textsuperscript{227}

1. No Precedent or Authority to Regulate Based on Precursor Events

There exists no precedent for regulating or drafting an MCL based on biological precursor events. In Federal Register notices and discussions, the EPA consistently addresses the question: “May [this contaminant] have an adverse effect on the health of persons?”\textsuperscript{228} A search of www.regulations.gov (the online address for the Federal Register) reveals that the EPA has used the term “precursor event” in three publications: two involving perchlorate, and once in a

\textsuperscript{225} Compare 73 Fed. Reg. 60262, 60265 (Oct. 10, 2008) (making a preliminary regulatory determination with regard to perchlorate that a national primary drinking water regulation was inappropriate because it would not “provide a meaningful opportunity to reduce health risk”) with 76 Fed. Reg. 7762, 7765 (Feb. 11, 2011) (finding that perchlorate regulation would present a meaningful opportunity to reduce health risk). The latter Federal Register notice directs the reader to the discussion of perchlorate’s regulatory history in the October 10, 2008, notice. There is no indication that the science involved in regulatory determinations changed between October 2008 and February 2011.

\textsuperscript{226} See § 300g-1(b)(1)(A)(i) (requiring that a contaminant “may have an adverse effect on the health of persons); 73 Fed. Reg. 60262, 60266 (Oct. 10, 2008) (calling iodide inhibition a precursor event); see also BOARD ON ENVIRONMENTAL STUDIES AND TOXICOLOGY, HEALTH IMPLICATIONS OF PERCHLORATE INGESTION 167 (National Research Council 2005).


1998 Notice discussing water quality criteria with regard to carcinogens.\textsuperscript{229} Current NPDWRs deal exclusively with adverse effects on human health.\textsuperscript{230}

The SDWA specifically requires the EPA Administrator to find a contaminant may have an \textit{adverse effect} on human health for proper regulation.\textsuperscript{231} Promulgating regulation predicated on a precursor event, as opposed to an adverse health effect, would give the EPA precedential authority to regulate any contaminant based on precursor events. With regard to endocrine disruptors and goitrogens, such as perchlorate, the life stages analysis proposed by the EPA presents an equally slippery precedential slope.\textsuperscript{232} This approach to perchlorate regulation, using the statistical presence of a biological precursor event, as opposed to the existence of an adverse health effect, renders such regulation out of compliance with the SDWA and beyond the grant of statutory authority.\textsuperscript{233} Perchlorate regulation, as proposed, lacks precedential or statutory authority and is improper under the SDWA.

2. Perchlorate Occurrence and Levels of Public Health Concern

Application of the occurrence requirement to perchlorate regulation has been, at best, inconsistent and requires revision to implement a clear, concise, principled method to evaluate whether perchlorate is sufficiently prevalent in PWSs to warrant regulation.

\textsuperscript{230} \textit{E.g.}, 65 Fed. Reg. 76708 (Dec. 7, 2008) (codified at 40 C.F.R. §§ 9, 141, 142 (West 2012)). For a list of currently regulated inorganic contaminants and their respective MCLs, see 40 C.F.R. § 141.62 (West 2012).
\textsuperscript{231} § 300g-1(b)(1)(A)(i).
\textsuperscript{232} [define life stages analysis]
\textsuperscript{233} M.A. Greer, G. Goodman, R.C. Pleuss, and S.E. Greer, \textit{Health Effect Assessment for Environmental Perchlorate Contamination: The Dose Response for Inhibition of Thyroidal Radioiodine Uptake in Humans}, 110 ENVTL. HEALTH PERSPECTIVES 927, 931 (2002).
In the 2008 preliminary determination to not regulate perchlorate and the 2011 regulatory
determination, the EPA used data from UCMR 1 to justify its decision.\textsuperscript{234} Clearly, the data has
not changed. The 2008 determination used a health reference level of fifteen micrograms per
liter, but in August 2009, the EPA proposed alternative health reference levels for fourteen
life stages.\textsuperscript{235} These levels ranged from one microgram per liter to forty-seven micrograms per
liter.\textsuperscript{236}

UCMR 1 contained a minimum reporting level of four parts per billion, or four
micrograms per liter.\textsuperscript{237} Of more than 150,000 PWSs in the United States,\textsuperscript{238} UCMR 1 analyzed
data on perchlorate from 3,865 systems between 2001 and 2005.\textsuperscript{239}

\textbf{C. Reconciling Authority and Public Policy}

\textbf{ROADMAP PARAGRAPH}

1. Public Policy in Favor of the SDWA

\textit{BASICALLY, EVERYBODY LIKES CLEAN WATER. POLICY IS SOUND, METHOD IS WRONG.}

2. Problems with the Statutory Language

Three main issues within the text of the SDWA necessitate revision. First, while the
purpose of the NPDWRs is to protect and promote the public health, these aims are part of the
police power traditionally reserved to the States, and unsupervised encroachment by the EPA
raises significant issues of federalism. Second, the statute is vague: the three requirements for

\textsuperscript{235} 74 Fed. Reg. 41883, 41888 (Aug. 9, 2009).
\textsuperscript{236} 76 Fed. Reg. 7762, 7764 (Feb. 11, 2011).
\textsuperscript{237} See Occurrence Data: Accessing Unregulated Contaminant Monitoring Data, supra note 16.
\textsuperscript{238} FACTOIDS: Drinking Water and Ground Water Statistics for 2009, EPA 3 (Nov. 2009),
\textsuperscript{239} 76 Fed. Reg. 7762, 7764 (Feb. 11, 2011); see Occurrence Data: Accessing Unregulated
Contaminant Monitoring Data, supra note 16.
regulation are inadequately defined and lead to uncertainty and unpredictability in the regulatory process. Finally, while the SDWA requires the EPA Administrator to consult scientific studies and authority, there remains no standard for how much weight should be lent to those authorities or how the information should be incorporated in the regulatory process.

FLESH THIS OUT ➔ see NRWA work

3. Revising the SDWA

Three major issues relating to the SDWA and regulatory promulgation should be considered for revision: federalism concerns; clarity and transparency of the regulatory process; and the approach to using scientific studies and principles in developing NPDWRs. The key in revising the SDWA will be focusing on the introduction of a standard approach to using scientific studies, principles, and findings when making regulatory determinations and promulgating NPDWRs.

Revisions revolving around federalism may focus on denying the EPA authority to regulate when fewer than, for example, fifteen or twenty States would be affected by a given regulation. States like Massachusetts and California have elected to self-regulate contaminants like perchlorate before the federal government ever gets involved.240 Rather than occupying the field of drinking water regulation, Congress could build into the SDWA provisions encouraging States to self-regulate and provide matching cleanup funds or decreased interest rates to facilitate necessary capital improvements.

To promote clarity, objectivity, and transparency in the regulatory process, Congress or the EPA needs to clarify definitions for “adverse health effect,” “sufficiently frequent occurrence,” and “levels of public health concern.” Additionally, the third prong of the

240 See 310 MASS. CODE REGS. 22.06 (codifying perchlorate regulation in Massachusetts); CAL. CODE REGS. tit. 22, § 64431 (same in California).
SDWA should be rescinded. “In the sole judgment of the Administrator” can be nothing but an entirely subjective requirement, and should be replaced with deference to the scientific community and the best available data.

A starting point for clarifying definitions and increasing transparency may be to codify deference to the National Research Council’s determinations for adverse health effects of a given contaminant, and allow the EPA to regulate at a factor of 0.6 of the contaminant level causing that effect. Contaminant occurrence that is sufficiently frequent to warrant federal regulation may be occurrence in at least fifteen states with a spectrum of PWSs reporting at levels of public health concern, where such level is defined as one half the reference dose. Replacing the subjective component of regulation dovetails nicely with increasing the role of scientific studies and deference to that community.

IV. CONCLUSION

The SDWA advances the admirable goal of providing safe drinking water across the nation. Ostensibly enacted by pairing Commerce Clause authority with the Necessary and Proper Clause, the SDWA exceeds congressional power because it does not bear on interstate commerce but rather intrastate activity that ought to be regulated by the States. The police power reserved to the States includes the authority to regulate for the public health, which is exactly what the SDWA purports to do. In its current form, the SDWA oversteps congressional authority and runs afoul of the Tenth Amendment and is, therefore, unconstitutional.

Furthermore, even if the SDWA is a proper exercise of congressional authority, perchlorate regulation thereunder does not comply with the statute. Regulating a precursor event is not the same as regulating an adverse effect. Perchlorate does not occur with sufficient

241 See supra notes _____ and attendant text for a discussion of the third prong and its subjective character.
frequency to fall under the SDWA authority.

To comply with the law, the SDWA should be rewritten with a focus on definable thresholds and statutorily required deference to the scientific community and the National Academy of Sciences in particular. The revised SDWA should also contain a jurisdictional hook, such that only those PWSs involved in interstate commerce are subject to regulation or federal regulation can only be triggered when a threshold number of States experience contamination at levels of public health concern.