



west virginia department of environmental protection

Executive Office
601 57th Street SE
Charleston, WV 25304
Phone: (304) 926-0440
Fax: (304) 926-0447

Earl Ray Tomblin, Governor
Randy C. Huffman, Cabinet Secretary
www.dep.wv.gov

Environmental Protection Advisory Council 2015 Annual Report

I. INTRODUCTION

This Annual Report is submitted in accordance with W. Va. Code § 22-1-9(e)(6), to apprise the Joint Committee on Government and Finance of the activities undertaken by the Environmental Protection Advisory Council for the period of January 1, 2015 through December 31, 2015. The Council was created in 1994 by an Act of the West Virginia Legislature, and it is currently organized and administered within the auspices of the Department of Environmental Protection (“DEP”). In addition to the preparation and submission of this Report, the Council’s mission, set forth in W. Va. Code § 22-1-9, embraces the following duties:

- (1) To consult with and advise the DEP Cabinet Secretary on program and policy development, problem solving, and other appropriate subjects;
- (2) To identify and define problems associated with the implementation of the legislative statement of purpose and policy set forth in W. Va. Code § 22-1-1(b) (a full recitation of which is made below) and observed by DEP;
- (3) To provide and disseminate to industry and the public early identification of major federal program and regulatory changes;
- (4) To provide a forum for the resolution of conflicts between constituency groups; and
- (5) To strive for consensus, to the extent possible, on the development of overall environmental policy.

II. COUNCIL MEMBERS

Eight members comprise the Council. The Cabinet Secretary is an *ex officio* member and serves as the Chair. The remaining seven members are appointed by the Governor, typically for full terms of four years, and any member may serve successive terms upon renewal of

appointment. The balance of constituencies among the Council members is fixed by statute and must be maintained: two members are associated with industries regulated by DEP; two members represent organizations advocating environmental protection; one member represents local government organizations; one member represents public service districts; and one member represents the largest coal miner's labor organization in the State.

There were two appointments to the Council during 2015. On January 22, 2015, Rebecca M. McPhail was appointed by the Governor to represent industry due to the retirement of Karen Price from the West Virginia Manufacturers Association. On April 29, 2015, the Governor appointed Dr. James Van Gundy to represent environmental organizations due to the resignation of Jacqueline A. Hallinan from Council. The remaining members were reappointed this year.

MEMBER	APPOINTMENT	REPRESENTS	TERM EXPIRES
Lisa K. Dooley Madison, West Virginia	10/01/1999 2002, 2005, 2015	Local Governments	June 30, 2017
Charles "Larry" Harris, Ph.D. Morgantown, West Virginia	10/12/1995 1997, 2002, 2005, 2015	Environmental Organizations	June 30, 2017
Rebecca M. McPhail Huntington, West Virginia	01/22/2015	Industry	June 30, 2018
William Raney Charleston, West Virginia	10/12/1995 1996, 2000, 2004, 2015	Industry	June 30, 2016
Charles "Rick" Roberts, Jr. Charleston, West Virginia	10/12/1995 1996, 2000, 2004, 2015	Public Service Districts	June 30, 2016
Ted Hapney Roane County, West Virginia	10/29/2010	UMWA	June 30, 2018
James VanGundy	04/29/2015	Environmental Organizations	June 30, 2018

III. SUMMARY OF ACTIVITIES DURING 2015

The Council met four times during 2015. The first meeting, on March 18, 2015, discussed the 2015 Regular Session of the Legislature as it pertained to environmental laws. At the June 18, 2015 meeting, DEP presented for the Council's review and comment the entire slate of agency rules proposed for 2016 Legislative Session. The September 17, 2015 meeting was an open discussion about the reliability of water quality data submitted by holders of NPDES permits and DEP's proposed methodology for determining biological impairment. The Director of the Division of Water & Waste Management and other DWWM employees were on hand to answer questions. The Council's final meeting for the year, on December 17, 2015, was a briefing from the agency on its agenda for the 2016 Regular Legislative Session. A more detailed recitation of the Council's actions appears in the Council's official minutes, which are included with this Report.

IV. STATEMENT ON DEP'S PERFORMANCE

The Council is required to include within its Annual Report its findings with regard to DEP's performance in accomplishing the purposes set forth in W. Va. Code § 22-1-1(b). These statutory purposes, upon which DEP was established, are:

- (1) To strengthen the State's commitment to restore, maintain, and protect the environment;
- (2) To consolidate environmental regulatory programs in a single State agency;
- (3) To provide a comprehensive program for the conservation, protection, exploration, development, enjoyment, and use of the natural resources of the State;
- (4) To supplement and complement the efforts of the State by coordinating its programs with the efforts of other governmental entities, public and private organizations, and the general public, to improve the quality of the environment, the public health and public enjoyment of the environment, and to propagate and protect animal, aquatic, and plant life, in a manner consistent with the benefits to be derived from strong agricultural, manufacturing, tourism, and energy-producing industries;
- (5) To endeavor, insofar as federal environmental programs require State participation, to obtain and continue State primacy in the administration of such programs, to endeavor to maximize federal funds that may be available to accomplish the purposes of the State and federal environmental programs, and to cooperate with appropriate federal agencies to meet environmental goals;
- (6) To encourage the increased involvement of all citizens in the development and execution of state environmental programs;
- (7) To promote improvement in the quality of the environment through research, evaluation, and sharing of information;
- (8) To improve the management and effectiveness of State environmental protection programs;
- (9) To increase the accountability of State environmental protection programs to the Governor, the Legislature, and the public generally; and
- (10) To promote pollution prevention by encouraging reduction or elimination of pollutants at the source through process modification, material substitutions, in-process recycling, reduction of raw material use, or other source reduction opportunities.

The Council finds that DEP has engaged in good-faith, reasonable efforts to accomplish the statutory purposes with which it is charged, a fair representation of which are outlined in

DEP's Annual Report and State of the Environment publications. It is recognized that the challenges facing the agency in fulfilling its mission are not static, but instead demand constant adaptation. DEP strives to do the best possible job with all resources it may access to implement the letter and the spirit of the Legislature's charge.

V. CONCLUSION

SUBMITTED this 31st day of December, 2015.

/s/Kristin A. Boggs

Kristin A. Boggs, General Counsel

ENVIRONMENTAL PROTECTION ADVISORY COUNCIL

MEETING MINUTES

March 18, 2015

I. CALL TO ORDER

Kristin A. Boggs, Ex Officio Chair designated by Secretary Randy Huffman, called to order the regular meeting of the Environmental Protection Advisory Council at 1:35 p.m. on March 18, 2015 at the headquarters of the West Virginia Department of Environmental Protection, 601 57th Street Southeast, Charleston, West Virginia. Agendas were distributed.

II. ROLL CALL

Members present: Ted Hapney, Bill Raney, and Rick Roberts. Larry Harris and Rebecca Randolph participated by phone. Lisa Dooley was absent.

The meeting was also attended by Wendy Radcliff, Environmental Advocate.

III. OLD BUSINESS

Minutes of the December 11, 2014 Meeting. The minutes were provided to Council via email and in hard copy for their review. Mr. Hapney moved for approval of the minutes, Mr. Raney seconded the motion, and it was carried by acclamation of Council.

IV. DEP LEGISLATIVE INITIATIVES FOR THE 2015 SESSION

Ms. Boggs summarized DEP's legislative initiatives for the 2015 Legislative Session and answered questions regarding the legislation.

INTRODUCED BY THE DEP:

- HB 2625 – Continuing the current hazardous waste management fee.
- HB 2626 – Relating to the use of the Abandoned Land Reclamation Fund.
- HB 2283 – Authorizing DEP to promulgate legislative rules.

BILLS OF INTEREST TO DEP:

- SB 255 – Eliminating unnecessary, inactive or redundant boards, councils, committees, panels, task forces, and commissions.
- SB 261 – Clarifying the Definition of “dam owner”.
- SB 280 – Allowing well work permit transfers.
- SB 357 – Creating the Coal Jobs & Safety Act of 2015.
 - Dr. Harris stated that he wants to be on record that he objects to any relaxation of the coal mine safety standards, and Ms. Boggs advised him – also for the record – that neither the DEP nor the Advisory Council have any jurisdiction over coal mine safety standards and generally do not officially weigh in on such matters.

- SB 423 – Amending the Aboveground Storage Tank (AST) Act.
- SB 469 – Making supplementary appropriation of federal funds to DEP.
- SB 502 – Relating to eligibility for certain reclamation or remediation tax credit.
- HB 2004 – Providing a procedure for the development of a state implementation plan under section 111(d) of the Clean Air Act (CAA).

VI. OTHER BUSINESS

- Next Council Meeting: June 18, 2015 at 1:30 p.m.

VII. ADJOURNMENT

All business being considered and discussions concluded, the meeting was adjourned at 2:05 p.m.

**ENVIRONMENTAL PROTECTION ADVISORY COUNCIL
MEETING MINUTES
June 18, 2015**

I. CALL TO ORDER

Kristin A. Boggs, Ex Officio Chair designated by Secretary Randy Huffman, called to order the regular meeting of the Environmental Protection Advisory Council at 1:35 p.m. on June 18, 2015 at the headquarters of the West Virginia Department of Environmental Protection, 601 57th Street Southeast, Charleston, West Virginia. Agendas were distributed. Ms. Boggs introduced Dr. James Van Gundy who was recently appointed to the Council.

II. ROLL CALL

Members present: James Van Gundy, Rebecca Randolph, Bill Raney, and Rick Roberts, Jr. Larry Harris, Ted Hapney, and Lisa Dooley participated by phone.

The meeting was also attended by the following DEP personnel: Kelley Gillenwater, Chief Communications Officer and Wendy Radcliff, Environmental Advocate; Jim Mason, Laura Jennings, and Laura Crowder from the Division of Air Quality (DAQ); Pat Campbell, Laura Cooper, Joe Sizemore, Ruth Porter and John Wirts from the Division of Water & Waste Management (DWWM); Harold Ward, Acting Director of the Division of Mining and Reclamation (DMR) and DMR employees Lewis Halstead, Charlie Sturey, and Russ Hunter; Mike Sheehan from the Division of Land Restoration; and James Martin, Chief of the Office of Oil and Gas (OOG).

Also present were Rob Goodwin, West Virginia Rivers/West Virginia Environmental Council (WVEC); Conni Gratop Lewis, West Virginia Environmental Commission; Ken Ward, Jr., Charleston Gazette; Samuel Speciale, Charleston Daily Mail; David Yaussy, Mark Clark, and Katherine Crockett, from Spillman, Thomas, & Battle; Armando Benincasa from Steptoe & Johnson, Mike Castle, Strategic Solutions; and Brett Loflin, Independent Oil & Gas Association of West Virginia, Inc. (IOGA).

III. OLD BUSINESS

Minutes of the March 18, 2015 Meeting. The minutes were provided to Council via email and in hard copy for their review. Bill Raney moved for approval of the minutes, Rebecca Randolph seconded the motion, and it was carried by acclamation of Council.

IV. PROPOSED 2016 LEGISLATIVE RULES

Division of Air Quality

- 45 CSR 16 – *Standards of Performance for New Stationary Sources* – New Source Performance Standards rule, promulgated last in 2015 Session. Revisions to the rule incorporate by reference amendments to the NSPS promulgated by EPA under 40 CFR Part 60 as of June 1, 2015 including: Oil and Natural Gas Sector; Industrial-Commercial-Institutional and Small Industrial-Commercial-Institutional Steam Generating Units; and New Residential Hydronic Heaters and Forced-Air Furnaces.
 - ◆ Oil & NatGas – EPA has amended NSPS provisions related to well completions, storage vessels, as well as technical corrections and amendments which further clarify the rule.
 - ◆ Utility NSPS – EPA has amended definitions of startup and shutdown that are consistent with the MATS and Industrial Boiler NESHAP rules.
 - ◆ Residential Wood Heaters – EPA has established NSPS for new residential hydronic heaters and forced-air furnaces, in accordance with §§111(b) and 114 of the CAA. The standards do not include any requirements for heaters solely fired by gas, oil or coal, or for residential wood heaters that are already in use.
- 45 CSR 18 – *Control of Air Pollution from Combustion of Solid Waste* – CAA §111(d)/129 combustion source rule, promulgated last in the 2014 session. Because of an April 18, 2014 decision by the U.S. Court of Appeals for the D.C. Circuit, affirmative defense provisions under CISWI have been vacated. The court action requires DAQ to strike subdivision 9.6.n, and mark it Reserved. Minor revisions to the continuous oxygen monitoring system provisions for CISWI energy recovery units in subdivision 9.10.q have been made to comport to the federal counterpart. A typographical error is also corrected in Table 18-9C.
- 45 CSR 25 – *Control of Air Pollution from Hazardous Waste Treatment, Storage and Disposal Facilities* – Resource Conservation and Recovery Act rule, promulgated last in the 2015 Session. Revisions to the rule include annual incorporation by reference updates with 33CSR20. This revised rule incorporates by reference the provisions of 40 CFR Parts 266, 270 and 279 promulgated as of June 1, 2015.
 - ◆ EPA has revised several recycling-related provisions under Parts 260 and 261 associated with the definition of solid waste used to determine hazardous waste regulation under RCRA. These revisions ensure that the hazardous secondary materials recycling regulations encourage reclamation in a way that does not result in increased risk to human health and the environment from discarded hazardous secondary material.

- ◆ EPA is removing provisions under Part 261 making comparable fuels that were previously excluded from the RCRA definition of solid waste subject to regulation. EPA is also revising Part 261 to remove gasification from the list of specific petroleum refining processes into which oil-bearing hazardous secondary materials may be inserted. As a result of these previously excluded materials now being identified as hazardous waste, facilities burning these materials will be subject to regulation as Hazardous Waste Combustors under 40 CFR Part 63 Subpart EEE, as well as applicable regulations under RCRA Subtitle C.
- ◆ RCRA Program Note: *The following to be IBR'd under Water & Waste RCRA Rule 33CSR20, not 45CSR25.* EPA has amended RCRA provisions to regulate the disposal of coal combustion residuals as solid waste pursuant to Subtitle D of RCRA. EPA has finalized national minimum criteria for existing and new CCR landfills and existing and new CCR surface impoundments. These criteria apply to all coal combustion residuals in coal mines.
- 45 CSR 34 – *Emission Standards for Hazardous Air Pollutants* – National Emission Standards for Hazardous Air Pollutants rule, promulgated last in the 2015 session. Revisions to the rule incorporate by reference amendments to the NESHAPs promulgated by EPA under 40 CFR Part 63 as of June 1, 2015 including: Polyvinyl Chloride and Copolymers Production Area Sources; Manufacture of Amino/Phenolic Resins; Off-Site Waste and Recovery Operations; Fossil-Fuel-Fired Electric Utility; and Coal-and Oil-Fired electric Steam Generative Units.
 - ◆ PVC Production – EPA has amended the NESHAPs for polyvinyl chloride and copolymers production area sources by withdrawing the total non-vinyl chloride organic hazardous air pollutant process wastewater emission standards.
 - ◆ A/P Resins – EPA has finalized the residual risk and technology review conducted for the Acrylic and Modacrylic Fibers Production, Amino/Phenolic Resins Production and Polycarbonate Production NESHAP. EPA has addressed emissions requirements during periods of startup, shutdown and malfunction, and added standards for previously unregulated HAP emissions. The amendments also include clarifying provisions pertaining to open ended valves and lines, monitoring requirements for pressure relief devices and requirements for electronic reporting of performance test results.
 - ◆ Off-Site Waste – EPA has finalized the residual risk and technology review conducted for the Off-Site Waste and Recovery Operations source category NESHAP. EPA has corrected and clarified provisions related to emissions during periods of startup, shutdown and malfunction, added requirements for reporting of performance testing through the Electronic Reporting Tool, revised routine maintenance provisions, and clarified provisions pertaining to

open-ended valves and lines. EPA has also added monitoring requirements for pressure relief devices, clarified provisions for performance test methods and procedures and made several minor clarifications and corrections.

- ◆ MATS SSM – EPA has amended startup and shutdown provisions for electric generative units in the Mercury and Air Toxics Standards rule, and provided an alternative compliance option for startup and shutdown periods.
 - ◆ MATS Reporting – EPA has amended the emission reporting requirements for electric generating units in the MATS rule by temporarily requiring sources to submit emissions and compliance reports through the Emissions Collection and Monitoring Plan System Client tool. The amendments temporarily suspend the requirement for owners or operators of affected sources to submit certain reports using the Compliance and Emissions Date Reporting Interface.
 - 45 CSR 39 – *Control of Annual Nitrogen Oxides Emissions* – Annual CAIR NO_x rule, promulgated last in the 2008 session. Rule is to be repealed, due to replacement of the CAIR program with the federal Cross State Air Pollution Rule (CSAPR). CSAPR became effective January 1, 2015, as set forth in an October 23, 2014 decision by the U.S. Court of Appeals for the D.C. Circuit.
 - 45 CSR 40 – *Control of Ozone Season Nitrogen Oxides Emissions* – Ozone Season CAIR NO_x rule, promulgated last in the 2008 session. Revisions to the rule remove CAIR provisions as the federal CSAPR program has replaced CAIR [76 FR 48208]. CSAPR became effective January 1, 2015, as set forth in an October 23, 2014 decision by the U.S. Court of Appeals for the D.C. Circuit. The revised rule retains 40 CFR Part 75, Subpart H monitoring requirements for large industrial boilers, and requires submission of an ozone season NO_x budget demonstration to EPA to satisfy state plan requirements set forth in 40 CFR §51.121. The rule retains ozone season NO_x reduction requirements for internal combustion engines and cement kilns.
 - 45 CSR 41 – *Control of Annual Sulfur Dioxide Emissions* – Annual CAIR SO₂ rule, promulgated last in the 2008 session. Rule is to be repealed, due to replacement of the CAIR program with the federal Cross State Air Pollution Rule (CSAPR). CSAPR became effective January 1, 2015, as set forth in an October 23, 2014 decision by the U.S. Court of Appeals for the D.C. Circuit.
- *James Mason answered questions of Council regarding the proposed rules.*

Division of Mining & Reclamation

- 38 CSR 2 – *West Virginia Surface Mining Reclamation Rule* – Promulgated last in the 2011 Session. In accordance with SB357, the Coal Jobs & Safety Act of 2015, the amendments to this rule conform to West Virginia’s rule with regard to contemporaneous reclamation and inactive status to its counterpart federal regulation, 30 CFR §§816.100-116, 816.131, 817.100-116, and 817.131. Specifically, the amendments address and clarify the procedure regarding inactive status, including renewing active operations and bonding requirements, and distance, acreage, and bonding requirements for contemporaneous reclamation. The proposed amendments also address concerns raised by the federal Office of Surface Mining Reclamation & Enforcement with regard to the use of the terms topsoil, topsoil substitute, soil, and soil substitute.
- *Harold Ward and Charlie Sturey answered questions of Council regarding the proposed rules.*

Division of Water & Waste Management

- 47 CSR 2 – *Water Quality Standards* – Promulgated last in the 2015 Session. In accordance with SB562 (2012) and SB357 (2015), the proposed amendments to this rule revise selenium and aluminum standards. The proposed amendments also address two requests for site-specific variances from water quality standards.
 - ◆ Site-specific variance for specified streams in Cheat River watershed – A variance to Martin Creek, Glade Run, and Fickey Run, all tributaries of Cheat River, due to human-caused conditions that have prohibited attainment of any designated uses. The variance will be in place while significant improvements are made to the existing condition of these waters.
 - ◆ Site-specific variance for specified streams in Tygart River watershed – A variance for Maple Run, Left Fork Little Sandy Creek, and a portion of Left Fork Sandy Creek, all tributaries of Tygart River, due to human-caused conditions that have prohibited attainment of any designated uses, The variance will be in place while significant improvements are made to the existing condition of these waters.
 - ◆ Aluminum hardness-based standard – Changes current aluminum criteria for aquatic life from a numeric value to an equation that is based on in-stream hardness. This equation can only be utilized in streams meeting specific pH and hardness requirements and streams not meeting the pH requirements will not be using this hardness-based equation approach, but will default back to the original criteria.

- ◆ Selenium fish tissue-based standards – Adds fish whole body and fish egg/ovary concentration standards to current water column selenium criteria for aquatic life, because organisms in aquatic environments exposed to selenium accumulate it primarily through their diet, and selenium toxicity occurs primarily through maternal-egg transfer. With this revised standard, when existing water column limit is exceeded, fish and/or egg tissue concentrations may be assessed to make a final determination of exceedance. This approach is consistent with methods recently drafted by EPA that are expected to be implanted as recommended nationwide criteria.
- *Comments from Dr. Larry Harris and Dr. James Van Gundy to the proposed rule are attached.*
- *47 CSR 30A – Administrative Proceedings and Civil Penalty Assessment for Coal Mining Facilities* – This is a new rule, proposed in accordance with SB357, which created a civil administrative penalties structure to resolve violations of the Mining NPDES Rule (47 CSR 30). Specifically, this proposed rule establishes procedures for (a) notice of commencement of Administrative proceedings, (b) hearings and appeals, (c) assessment of civil penalties, and (d) entry of consent orders.
- *47 CSR 63 – Aboveground Storage Tanks* – This is a new rule, proposed in accordance with SB 423, the Aboveground Storage Tank Act. Specifically, this proposed rule defines terms; establishes procedures for registering tanks, obtaining certificates to operate or amending already existing plans or permits, and delivery prohibition; and establishes requirements for operation and maintenance, inspection, reporting and recordkeeping, corrective action, design, construction, and installation, corrosion and deterioration prevention, release prevention, leak detection, and secondary containment; nonoperational, change-in-service, and tank closure; and financial responsibility requirements.
- *47 CSR 64 – Rules Governing Aboveground Storage Tank Fee Assessment* – This is a new rule, proposed in accordance with SB423, which establishes a system for payment of an inventory registration fee, an annual operating fee, and an annual response fee. It also establishes procedures for fee calculation, collection, and deposit and the assessment of penalties if a tank owner does not pay the required fees.
- *47 CSR 65 – Aboveground Storage Tank Administrative Proceedings and Civil Penalty Assessment* – This is a new rule, proposed in accordance with SB423, which creates a civil administrative penalties structure to resolve violations of the Aboveground Storage Tank Act or its associated legislative rule. Specifically, this proposed rule establishes procedures for (a) notice of commencement of administrative proceedings, (b) hearings and appeals, (c) assessment of civil penalties, and (d) entry of consent orders.
- *Pat Campbell, Joe Sizemore, Laura Cooper, Ruth Porter, and Mike Sheehan answered questions of Council regarding the proposed rules.*

Office of Oil & Gas

- 35 CSR 8 – *Draft Rules Governing Horizontal Well Development* – DEP proposes the following changes to 35CSR 8:
 - ◆ Create additional permitting and operational requirement to safeguard groundwater in karst regions - §22-6A-3a requires DEP to promulgate rules to establish drilling standards in geographic regions having karst geology. Draft rules include site-review, testing requirements, and drilling protocols for any wells permitted in a defined karst region.
 - ◆ Describe a water flow and quality testing procedure for landowners who request to have their drinking water wells sampled - §22-6A-8 entitles private water well owners within 1,500 feet of a water supply well to quality and flow testing. In addition to quality testing parameters already established, the proposed rules describe a test to evaluate the yield of a well to serve as a baseline in the event of a suspected water diminution.
 - ◆ Protect groundwater aquifers by establishing aquifer testing protocols that must be performed before potential water supply wells can be used to support hydraulic fracturing activities – The proposed rule establishes an aquifer test to assess the suitability of a groundwater well to support its use as a water source for hydraulic fracturing activities.
 - ◆ Define procedures to be used when plugging the horizontal component of directionally drilled wells - §22-6A-13 requires DEP to promulgate rules specific to the plugging of horizontal wells.
 - ◆ Eliminate the need for (and prohibit) the construction of waste pits on drilling locations by requiring the use of closed-loop drilling techniques – DEP adds language that requires drilling to be completed using closed-loop technology. The use of these techniques eliminates the need for the construction of associated pits on-site.
 - ◆ Ensure cement and formation integrity by allowing for integrity testing for all casing strings – Currently formation integrity tests are optional in the intermediate casing string, but proposed revision would make such testing optional for all strings at the discretion of the Chief.

- ◆ Establish a borehole accuracy requirement to be adhered to while drilling – Errantly drilled boreholes present safety and ownership concerns. Modern advances in drilling technology allow boreholes to be drilled with high precision, and the draft language will mandate adherence to the permitted lateral location.
- *James Martin and Pat Campbell answered questions of Council regarding the proposed rules.*

VI. OTHER BUSINESS

- ❖ Dr. Harris inquired as to whether DEP had received and are considering WVU College of Law's Center for Energy & Sustainable Development's discussion paper entitled "Carbon Dioxide Emission Reduction Opportunities for the West Virginia Power Sector. Ms. Boggs advised DEP had received this but had not yet had time to review it.
- ❖ The next meeting of the Council is **September 17, 2015 at 1:30 p.m.**

VII. ADJOURNMENT

All business being considered and discussions concluded, the meeting was adjourned at 2:40 p.m.

Comments from Charles Larry Harris

From: dharris :

Sent: Thursday, June 18, 2015 2:49 PM

Here is my comment on the new Aluminum standard which might be appended to the minutes, along with Dr. Van Gundy's excellent comments (perhaps you might forward to him as his email is not on this list):

The hardness based Al standards should not be implemented. There is insufficient evidence that such a method would adequately protect stream health; i.e. fish and aquatic species. Can the DEP cite instances where this standard is used and what the results on streams might be. The EPA does not use this method for Al and cites the following in a footnote to the standard:

S There are three major reasons why the use of Water-Effect Ratios might be appropriate.

1. The value of 87 $\mu\text{g/l}$ is based on a toxicity test with the striped bass in water with pH = 6.5-6.6 and hardness <10 mg/L. Data in "Aluminum Water-Effect Ratio for the 3M Plant Effluent Discharge, Middleway, West Virginia" (May 1994) indicate that aluminum is substantially less toxic at higher pH and hardness, but the effects of pH and hardness are not well quantified at this time.
2. In tests with the brook trout at low pH and hardness, effects increased with increasing concentrations of total aluminum even though the concentration of dissolved aluminum was constant, indicating that total recoverable is a more appropriate measurement than dissolved, at least when particulate aluminum is primarily aluminum hydroxide particles. In surface waters, however, the total recoverable procedure might measure aluminum associated with clay particles, which might be less toxic than aluminum associated with aluminum hydroxide.
3. EPA is aware of field data indicating that many high quality waters in the U.S. contain more than 87 g aluminum/L, when either total recoverable or dissolved is measured.

Comments regarding the proposed Emergency Aluminum rule (J. Van Gundy)

I ask the WVDEP to proceed with caution in employing a hardness-based approach to setting a new and significantly more permissive Aluminum water quality standard. The few studies that are available do not make nearly as strong a case for the protective effects of hardness against Aluminum toxicity as has been made for divalent metals such as Cadmium, Copper, and Zinc. In addition, very little is known about the fate and biological effects of Aluminum in natural aquatic systems.

It is reasonably well understood that different chemical species of Aluminum have different levels of toxicity. As water moves through a stream system, pH, temperature, and other factors change and may affect the chemical species of Aluminum present. Such changes are especially likely to occur in zones where two streams of varied chemical and physical quality meet and mix, and there is some field evidence to support the assertion that the toxicity of aluminum may increase in such mixing zones. Also, the reliance on a single parameter, hardness, to calculate safe levels of Aluminum disregards the scientific evidence that pH (within the range of 6.5 - 9.0), temperature, and the presence of other dissolved constituents may have equal or greater influence on Aluminum toxicity. For instance, Lydersen (1990) showed that a decrease in temperature of about 15°C has the same effect on Aluminum speciation and solubility as does a decrease in pH by one unit; thus temperature is important to consider when calculating Aluminum toxicity.

The specific biological activity of the various Aluminum species is almost entirely unknown as most published studies have dealt with a very limited list of test organisms under often poorly controlled or poorly characterized experimental conditions.

The reliance on a standard that considers only dissolved Aluminum is particularly problematic. Insoluble forms of Aluminum may well have significant biological effects. For example, precipitated $\text{Al}(\text{OH})_3$ may coat and clog respiratory structures or surfaces and interfere with the ability of aquatic organisms to exchange respiratory gasses. It is also likely that insoluble Aluminum hydroxides are converted to soluble and therefore more toxic forms when ingested. None of the bioassay studies referenced in the GEI Report (GEI, 2011) examined routes of Aluminum exposure other than absorption across external body surfaces.

The GEI Report upon which WV DEP bases its case for a hardness-based Aluminum WQ rule, relies upon mostly static and mostly short-term bioassays involving relatively few species, and only a few of which actually occur in West Virginia waters. The US EPA recommends the use of indigenous species in developing criteria intended to apply statewide (as opposed to nationwide or federal standards.)

More significantly, the standard 96 hour short-term bioassay procedure requires that the test animals not be fed during the test period. As a consequence of this, dietary sources of Aluminum are not considered in evaluating its potential toxicity towards aquatic organisms. For some organisms in nature however, dietary exposure may be the major mode of entry of toxins (Poteat and Buchwalter, 2011). These authors state that in every study comparing dietary vs. dissolved exposure of which they are aware, diet is the predominant route of exposure of aquatic insects to toxic metals and they conclude that dietary acquisition strongly drives the bioaccumulation of metals in aquatic insects. One study (Cain *et al.*, 2011) suggests that as much as 95% of the toxic metal body burden of aquatic insects may come from dietary sources. Another study (Xie and Buchwalter, 2011) suggests that diet-derived metals may be more physiologically active than those acquired in dissolved form through gills or other external body surfaces.

While many laboratory studies have indicated that aquatic insects are relatively insensitive to metals, a number of field studies conducted in natural aquatic systems have suggested that it is the aquatic insects that are among the first members of the aquatic community to disappear at metals-

contaminated sites (Brix et al, 2011). This disconnect makes sense if the primary route of exposure is via the digestive tract rather than passage of dissolved metals through respiratory or other body surfaces since only the later is generally considered in laboratory studies.

Many of the stream insects of West Virginia feed upon detritus, i.e. dead particulate organic material transported by streamflow. In fact, such materials often represent the base of the food webs of forested upland stream systems. Much of this material originates in the terrestrial ecosystem that surrounds the stream rather than in the stream itself. Seasonally-shed tree leaves and flowers constitute the bulk of this detrital material which may consist of particles as large as a whole leaf or as small as a grain of pollen. The bulk of a leaf's dry weight consists of cellulose which cannot be digested by stream insects. What detritus-feeding insects actually feed upon is a thin surface layer of aquatic bacteria and fungi that are actually digesting the cellulose of the leaf. For the aquatic macro-invertebrate there is relatively little nutritional value in the detritus itself.

Over the usual pH range of natural waters, any aluminum that enters a stream in soluble form is likely to be rapidly converted to insoluble Aluminum hydroxide, $\text{Al}(\text{OH})_3$, which may be incorporated into bottom sediments or may coat the surfaces of submerged objects. In either location it is probable that it will be ingested by stream animals that make their living by scraping algae off of rocks, or shredding leaves, or filtering small particles of organic material out of the water, or by simply passing bottom sediment through their digestive tracts, extracting anything digestible that happens to be included in it. All of these represent feeding styles of aquatic insects or other macro-invertebrates that inhabit West Virginia's streams. Detritus is a low quality food material and therefore detritus feeders must consume large quantities of it to meet their nutritional needs. If the material is coated with Aluminum hydroxide or otherwise contains Aluminum in particulate form, detritivores will potentially ingest a great deal of Aluminum in the course of their normal feeding activities. Corbi *et al* (2010) found that Iron and Aluminum in sediments were "highly bioaccumulated" by aquatic insects and that metals levels in aquatic insect larvae varied directly with the concentration of those metals in the sediments of the streams in which they lived.

In a survey of Swedish streams of different acidities and Aluminum concentrations Herrmann and Frick, (1995) found that a predacious stonefly (*Isoperla grammatica*) consistently had aluminum tissue levels only about a third as high as the detritus-feeding organisms upon which it fed. This is consistent with Aluminum's apparently modest potential for biological magnification, but since both stonefly and prey were exposed to the same levels of dissolved Aluminum in the external medium, they would be expected to contain similar Al tissue levels if absorption via body surfaces was the only route of entry. This observation supports the notion that detritivores acquire Aluminum from other sources, presumably dietary ones, since in natural systems, that is the only other possible route of exposure.

The chemical environment in an animal's digestive tract is far different from that of the external environment and would be expected to influence the uptake and perhaps the chemical speciation of ingested metals. Dow (1992) found that members of at least four Orders of Insects (Coleoptera, Diptera, Lepidoptera, and Isoptera) have midgut pHs in excess of 12 - the highest pH known in any biological system. There is some evidence that these high pH values represent an adaptation to a tannin-rich diet such as plant detritus (Berenbaum, 1980). Since terrestrial plant detritus is a major food source for many members of the aquatic insect communities of forested upland stream systems, these animals might be expected to have a similar type of digestive physiology.

As pH varies, changes in inorganic Aluminum speciation are nearly instantaneous (Gensemer & Playle, 1999). At the high pH of the insect midgut., ingested particulate Aluminum compounds would be expected to be rapidly converted from the insoluble and relatively non-toxic forms such as the $\text{Al}(\text{OH})_3$ prevalent at normal stream pHs into more soluble (and more toxic) forms such as the Aluminate ion, $\text{Al}(\text{OH})_4^-$. Such effects are of course not accounted for by the standard 96 hour bioassays used in support of the hardness-based Aluminum model. Detritus-feeding macro-

invertebrates are keystone species in woodland stream ecosystems, and as such, a water quality rule that is not protective of them is not protective of aquatic life in general.

It would be useful if the WV DEP could produce data that shows that the currently permissible levels of Aluminum are truly protective of a range of aquatic life broader than just salmonid fishes and daphnids. Unfortunately, the requisite laboratory studies have apparently not been done and the evaluation of Aluminum toxicity from field data is difficult at best due to the presence of multiple confounding factors. We have seen no evidence that the discharge of Aluminum even at currently permissible levels is protective of all of the species of aquatic life that are important in West Virginia's aquatic ecosystems. Because there is such a paucity of relevant scientific information regarding both the effects of Aluminum on aquatic organisms and the role that water hardness plays in ameliorating such effects, I feel that it is irresponsible to drastically increase the amount of Aluminum that can be legally discharged until such time as a better understanding of the possible effects of such a change is at hand. It may well be that discharging Aluminum at the levels that this proposed rule would permit will still be protective of West Virginia's aquatic life, but right now no one can say with any authority that this is the case.

Much, if not most of the data relied upon by the GEI report was generated by studies that were not designed to demonstrate that a hardness-based Aluminum standard such as the one proposed by the WV DEP will be protective of aquatic life. The studies cited in the GEI Report show a good deal of scatter of LC50 figures for similar values of hardness and pH. Such scatter of values for the same organism, and the same investigator(s), and for similar hardness and pH values suggest that factors other than hardness were likely important in determining the Aluminum toxicity in the test situations. In addition, because of the sensitivity of Aluminum chemistry to pH (and other factors), it is not at all clear in these data which species of Aluminum were actually being evaluated.

According to the GEI Report, at the pHs employed in the cited toxicity studies, the dosed Aluminum should rapidly be converted to poorly soluble polymeric hydroxides. In the study of McCauley et al. (1986) there is considerable variation in LC50 values while pH varies somewhat and hardness is constant. There is also some evidence in these data (see data from Gundersen et al. 1994) that flow-through bioassays yield lower LC50 (i.e. higher toxicity) values than do static tests under otherwise comparable conditions. This possibility was also mentioned in EPA's 1988 Aluminum Water Quality Criteria document. It is possible that the high LC50 values produced by some of the static testing is due to conversion of Aluminum to less soluble and therefore less toxic forms over the duration of the bioassay. Although still within the pH 6.5 to pH 9 range, the pH values employed in the Gundersen studies were higher than those of most of the other studies used in this data set. This may have resulted in more toxic forms of Aluminum [eg. $Al(OH)_4^-$] being produced. Gensemer and Playle (1999) point out that the prediction of Aluminum toxicity at $pH > 7$ is not a simple matter and is limited by a poor understanding of the bioavailability of Aluminum under alkaline conditions.

So little is known of the fate and biological effects of Aluminum in natural aquatic systems that it seems prudent to take a conservative approach to revising the Aluminum standard at this time. A great deal more sound science is needed before it can confidently be determined what levels of Aluminum are protective of the aquatic life of West Virginia's waters. Until that science is available, it is irresponsible to permit the significantly greater aquatic loading of Aluminum that this emergency rule would allow. I therefore respectfully ask that the WV DEP take the following points into consideration as it finalizes a revised Aluminum standard.

1. The scientific support for the assertion that increased levels of hardness are protective against Aluminum toxicity is considerably weaker than it is for the protective effects of hardness against divalent metals such as Copper or Cadmium..
2. Only a few of the scientific studies that were used to support this assertion were specifically designed to examine the relationship between hardness and Aluminum's toxicity towards aquatic organisms.
3. In many of the published studies cited by the GEI Report, the experimental conditions were poorly controlled or poorly characterized.
4. There is some evidence that the toxicity of Aluminum increases at the higher end of the pH range 6.5 to 9.0.
5. The organisms used to derive the slope of the aluminum-hardness relationship: *Ceriodaphnia dubia*, *Daphnia magna*, and *Pimephales promelas* are either not found or are uncommon in the vast majority of the West Virginia streams to which this rule would apply. In addition, these organisms are relatively tolerant of a wide range of polluted conditions.
6. USEPA recommends the use of indigenous species in developing criteria intended to apply statewide (as opposed to nationwide or federal standards.) As far as I can determine, this was not the case in the scientific studies that are cited to support the proposed Aluminum rule.
7. The assumption that insoluble Aluminum will remain insoluble as it moves through chemically and physically variable stream environments, and through the digestive tracts of organisms themselves, will almost certainly not be valid in many cases.
8. While the equations used to derive allowable levels of discharged Aluminum under this rule are similar to those used by the states of Colorado and New Mexico, they are not identical and the WV DEP should provide a scientific rationale for these differences.
9. WV DEP should provide scientific justification for the use of an Aluminum-hardness relationship (the equation) that was developed for total recoverable Aluminum to be applied to a rule based upon dissolved Aluminum alone.
10. Any hardness-based rule that is adopted by the state of West Virginia should employ total recoverable aluminum as a basis of calculation rather than dissolved Aluminum alone.

Submitted by:

James J. Van Gundy, Ph.D.
Member, Environmental Protection Advisory Council

References:

- Berenbaum, M. 1980. Adaptive Significance of Midgut pH in Larval Lepidoptera. *Amer Nat*, vol. 115, no. 1, 1980
- Brix, Kevin V., David K. DeForest, and William J. Adams. 2011. The sensitivity of aquatic insects to divalent metals: A comparative analysis of laboratory and field data. *Science of the Total Environment* 409 (2011) 4187–4197
- Cain, D. 2011. M.N. Croteau, and S. Luoma, . Bioaccumulation dynamics and exposure routes of Cd and Cu among species of aquatic mayflies. *Environ. Toxicol. Chem.* 2011, 30 (11), 2532–2541, DOI: 10.1002/etc.663.
- Corbi, Juliano Jose (2010) and Claudio Gilberto Froehlich, Susana Trivinho Strixino, Ademir dos Santos. Bioaccumulation of metals in aquatic insects of streams located in areas with sugar cane cultivation. *Quim.Nova* vol 33 no.3 Sao Paulo.
- Dow , J.A.T. 1992. pH Gradients in Lepidopteran Midgut. *J.Exp Biol.* 172, 355-375
- EPA. 1988. Ambient Water Quality Criteria for Aluminum. EPA 440/5-86-008
- GEI Consultants, Inc. 2011. Updated Freshwater Aquatic Life Criteria for Aluminum. Report to Henthorn Environmental Services, LLC, St. Albans, WV.
- Gensemer, Robert W. & Richard C. Playle. 1999. The Bioavailability and Toxicity of Aluminum in Aquatic Environments, *Critical Reviews in Environmental Science and Technology*, 29:4, 315-450
- Hem, J.D. and C.E. Roberson. 1967. Form and Stability of Aluminum Hydroxide Complexes in Dilute Solution. USGS Water Supply Paper 1827-A
- Herrmann, J. and Frick, K. 1995. Do stream invertebrates accumulate aluminium at low pH conditions? *Water, Air and Soil Pollution* 85, 407412.
- Lydersen, E. 1990. The solubility and hydrolysis of aqueous aluminium hydroxides in dilute fresh waters at different temperatures. *Nordic Hydrol.* 21, 195–204.
- Poteat, Monica D. and David R. Buchwalter. 2011. Four reasons why traditional metal toxicity testing with aquatic insects is irrelevant. *Environ. Sci. Technol.* 2014, 48, 887–888.
- Wilson, Rod W. 2011. *in* Wood, Farrell, and Brauner (Eds.) *Homeostasis and Toxicity of Non-Essential Metals*.
- Xie, L. and Buchwalter, D. B. 2011. Cadmium exposure affects antioxidant responses in the mayfly *Centroptilum triangulifer*. *Aquat. Toxicol.* 2011, 105, 199–205, DOI: 10.1016/j.aquatox.2011.06.009.

**ENVIRONMENTAL PROTECTION ADVISORY COUNCIL
MEETING MINUTES
September 17, 2015**

I. CALL TO ORDER

Deputy Secretary Scott Mandirola, designated by Secretary Randy Huffman, called to order the regular meeting of the Environmental Protection Advisory Council at 1:45 p.m. on September 17, 2015 at the headquarters of the West Virginia Department of Environmental Protection, 601 57th Street Southeast, Charleston, West Virginia. Agendas were distributed.

II. ROLL CALL

Members present: Dr. James Van Gundy, Bill Raney, Rick Roberts, Jr., Ted Hapney. Rebecca Randolph participated by phone. Lisa Dooley and Dr. Larry Harris were absent.

The meeting was also attended by the following DEP personnel: Scott Mandirola, Deputy Cabinet Secretary & Director of the Division of Water & Waste Management (DWWM) and Linda Keller, Environmental Resources Program Manager 1 of DWWM. Also present was Conni Gratop Lewis with the WV Environmental Council.

III. OLD BUSINESS

Minutes of the June 18, 2015 Meeting. The minutes were provided to Council via email and in hard copy for their review. Bill Raney moved for approval of the minutes pending correction to the spelling of Conni Gratop Lewis' name, Ted Hapney seconded the motion, and it was carried by acclamation of Council.

IV. QUESTION & ANSWER DISCUSSION WITH DIVISION OF WATER & WASTE MANAGEMENT DIRECTOR & EMPLOYEE(S)

- ❖ Dr. James Van Gundy asked questions regarding the reliability of water quality data and methodology for determining biological impairment. Scott Mandirola answered these questions. Mr. Mandirola discussed the new procedures in place at Appalachian Laboratories regarding the recent falsification of data including: new management, new SOP's (available through FOIA) and ethics training.
- ❖ Dr. Van Gundy questioned whether these changes were required by the WV DEP. Mr. Mandirola answered that these changes were incorporated voluntarily by Appalachian Laboratories.

- ❖ Dr. Van Gundy asked what the WV DEP has learned from this situation. Mr. Mandirola answered that the rules currently spell out the requirements to become lab certified. At this time, WV DEP does not have the authority over certifying field sampling despite two requests to the Legislature to obtain authority.
- ❖ Dr. Van Gundy asked if the request will be resubmitted to the Legislature. Mr. Mandirola stated that the WV DEP may be inclined to resubmit pending further evaluation.
- ❖ Mr. Mandirola discussed the severity of offense and repercussions of falsifying data up to and including imprisonment.
- ❖ Dr. Van Gundy asked if the WV DEP has made any changes to affect the reliability of DMR's. Mr. Mandirola discussed the checks and balances within the DMR Program. Linda Keller expanded on that answer describing the Electronic DMR review process.
- ❖ Mr. Bill Raney asked if the WV DEP had found the issues with Appalachian Laboratories. Linda Keller answered that the WV DEP was alerted by the US EPA but that it was not released how the falsification was actually discovered.
- ❖ Mr. Rick Roberts asked if training was a lab certification requirement. Mr. Mandirola answered that it was not a requirement at the present time but that it could be incorporated as part of the quality assurance/quality control plan in the recertification process.
- ❖ Dr. Van Gundy asked whether the questions he had previously submitted had been answered. Mr. Mandirola answered that they had and offered to email written answers to all of the council members present by the end of the week.
- ❖ Dr. Van Gundy asked if the WV DEP had the authority to issue a handbook online detailing the environmental sampling process. Mr. Mandirola suggested that this material may already exist through other resources.
- ❖ Mr. Raney mentioned discussing the possibility of starting a sampling certification program. Council discussed that such a program may be cost-inhibitive but that further discussions could possibly take place in the future.

V. **OTHER BUSINESS**

- ❖ The next meeting of the Council is scheduled for **December 17, 2015 at 1:30 p.m.**

VI. **ADJOURNMENT**

All business being considered and discussions concluded Dr. Van Gundy moved that the meeting be adjourned and Mr. Roberts seconded the motion. The meeting was adjourned at 2:26 p.m.

**ENVIRONMENTAL PROTECTION ADVISORY COUNCIL
MEETING MINUTES
December 17, 2015**

I. CALL TO ORDER

Kristin A. Boggs, Ex Officio Chair designated by Secretary Randy Huffman, called to order the regular meeting of the Environmental Protection Advisory Council at 1:35 p.m. on December 17, 2015 at the headquarters of the West Virginia Department of Environmental Protection, 601 57th Street Southeast, Charleston, West Virginia. Agendas were distributed.

II. ROLL CALL

Members present: Larry Harris, Rebecca McPhail, Bill Raney, Rick Roberts, Ted Hapney, and James Van Gunyd. Lisa Dooley was absent. Seven of eight members being present, a quorum was had.

The meeting was also attended by Randy Huffman, Cabinet Secretary; Scott Mandirola, Deputy Cabinet Secretary, Nancy Knurek of Babst Calland; Grant Ehumon of Spilman Thomas & Battle; and Conni Gratop Lewis of the West Virginia Environmental Council.

III. OLD BUSINESS

Minutes of the September 17, 2015 Meeting. The minutes were provided to Council via email and in hard copy for their review. Mr. Raney moved for approval of the minutes, Mr. Roberts seconded the motion, and it was carried by acclamation of Council.

IV. DEP LEGISLATIVE INITIATIVES FOR THE 2016 SESSION

Ms. Boggs summarized DEP's legislative initiatives for the 2016 Legislative Session and answered questions of Council regarding the same:

- ❖ Exempting DEP's Construction / Reclamation Contracts from the Division of Purchasing's Review Requirement: This legislation would exempt DEP's construction and reclamation contracts (as entered into by the Office of Abandoned Mine Lands and the Division of Land Restoration's Office of Special Reclamation) from the requirement that such contracts be "examine[d] . . . and approve[d]" by the Division of Purchasing. The proposed exemption would be in form and substance identical to the exemption already enjoyed by "construction and repair contracts entered into by the Division of Highways." The intention of this legislation is to free up DEP's construction/reclamation contracts from the stranglehold of review they currently undergo by Purchasing and to allow millions of dollars of construction contracts to be "put on the ground" in a timely manner.

- ❖ Eliminating the Prohibition against Disposing of Covered Electronic Devices in Landfills: This legislation would amend the Code to eliminate the prohibition against disposing of covered electronic devices (CEDs) in landfills. The prohibition was added during the 2009 session as part of a larger proposal to facilitate the recycling of CEDs. However, the landfill prohibition has had the opposite of the desired effect: since landfills can't accept these materials, waste haulers will not pick them up, so people are throwing them over hillsides and into creeks and otherwise improperly disposing of them. This proposal will solve this problem by allowing for the proper disposal of CEDs in landfills, if they cannot be recycled.

V. OTHER BUSINESS

Update by the Secretary. Secretary Huffman and Council discussed current issues facing the agency, to include the various coal bankruptcies and how the agency plans to handle them.

2015 Annual Report. The report was provided to Council via e-mail and in hard copy for their review. Dr. Van Gundy did not receive a copy, despite its being emailed to him on November 25, so he asked that its consideration be held over until the next meeting. Council agreed.

2016 Meeting Dates. Council scheduled dates for 2016 as follows: March 17, June 16, September 15, and December 15, all meetings to commence at 1:30 p.m. at DEP's headquarters in Kanawha City.

VII. ADJOURNMENT

All business being considered and discussions concluded, the meeting was adjourned at 2:25 p.m.