



NATIONAL MEASURES TECHNICAL APPENDIX

Significant National Environmental Justice Challenges: Measures Technical Information

TABLE OF CONTENTS

INTRODUCTION AND OVERVIEW	3
GUIDE TO THE APPENDIX	4
MEASURES TECHNICAL INFORMATION.....	6
BLOOD LEAD LEVEL DISPARITIES.....	6
TRIBAL DRINKING WATER SYSTEMS.....	12
FINE PARTICLE AIR POLLUTION.....	15
HAZARDOUS WASTE SITES.....	19

INTRODUCTION AND OVERVIEW

Several types of measures are necessary to help tell the story about how the U.S. Environmental Protection Agency (EPA or Agency) is making a difference in communities with environmental justice (EJ) concerns. For example, each priority area of the EJ 2020 Action Agenda (EJ 2020) includes milestones and measures for implementation. One of the most important cross-cutting concepts raised in public comments and embraced in EJ 2020 is the need to demonstrate national progress toward achieving environmental outcomes that matter to overburdened communities. This Appendix provides technical information about the national outcome measures that support the four Significant National Environmental Justice Challenges discussed in Chapter 10 of EJ 2020 (lead disparities, small and tribal drinking water systems, fine particle air pollution, and hazardous waste sites).

As a start, EPA has identified five national measures of progress that are based on available data and demographic analyses. The Agency also is reviewing public comments and conducting additional analyses to identify both opportunities for improving the existing measures and for developing additional meaningful measures of progress on a national scale. To ensure the Agency's approach continues to respond effectively to public concerns, EPA will collaborate over the next several years with local governments, states, tribes, other federal agencies and EJ stakeholders to improve existing measures and develop additional meaningful national measures. EPA recognizes that addressing some disparities may require expertise, resources and authorities outside of EPA's direct control. Therefore, EPA will use these national measures to draw attention to these important issues and to actively promote partnerships, coordination and collaboration with the partners and stakeholders noted above.

Annual Reporting

To ensure the public is informed about EPA's progress in areas that matter to overburdened communities, the Agency will report available national EJ performance data annually on EPA's [EJ 2020 website](#), as well as progress in improving existing and developing new national EJ measures of progress. While EPA will publish measures and performance data as they are available, it frequently takes time – often a number of years – to collect and validate performance data, conduct necessary analyses, develop baselines and targets, and report performance.

Integration with EPA's Planning and Budgeting

In consultation with our partners and stakeholders and the Office of Management and Budget, EPA will continue to align and integrate as appropriate, reporting on national EJ measures in the Agency's FY 2018 Annual Plan and Budget, the FY 2018-2019 National Program Managers Guidance and Annual Commitment Process, and the FY 2018-2022 Strategic Plan. Integration into EPA planning and accountability processes will promote attention to EJ issues as part of the way the Agency does business.

GUIDE TO THE APPENDIX

This Appendix contains detailed information about each of the five national EJ measures that will be used to assess and communicate progress in addressing the Significant National Environmental Justice Challenges described in Chapter 10 of the EJ 2020 Action Agenda. Each measure contains information about the following sections, including, where available, relevant hyperlinks.

- 1. Goal:** This section provides an aspiration goal that represents the desired end state that the Agency will strive to achieve. In some cases, achievement of the goal may be outside of EPA's sphere of control, capability or capacity, but nevertheless is the Agency's ultimate aim.
- 2. Measure:** This section is the text of the measure by which the Agency will assess progress. The section includes information on what is being measured, a target to be achieved (if applicable), a date by which the target is to be achieved, and information about the baselines or universe that provides context for the magnitude of the EJ issue being addressed and the significance of the performance target, if applicable. Note that not all measures described here contain targets and may be referred to as "indicators."
- 3. Performance Measure Term Definitions:** This section defines each key term used in the performance measure, including additional background information and/or references about the measure, so readers can better understand why the measure is important in the context of environmental justice.
- 4. Relevance to Environmental Justice:** This section describes why the measure is important to communities with EJ concerns and may include available demographic information that helps characterize potential disparities in low-income and/or minority populations.
- 5. Mission and Organizational Context:** This section provides information about where responsibility for achieving the measure lies with the Agency, including the national program manager (NPM) and sub-offices with management responsibility. Information is also provided about how the measure relates to Goals and Objectives of the Agency's Strategic Plan.
- 6. Meta Data:** This section provides information about the origin and characteristics of the data EPA uses (or plans to use) to calculate performance related to the measure. This information helps communicate the representativeness and validity of the performance result and the applicability to communities with EJ concerns. Categories of meta data that may be described include the following:
 - a) Original Data Source** – Identifies the entity or entities providing the data that EPA uses to calculate performance.
 - b) Source Data Collection** – Describes the manner by which source data are collected by all original data source(s), including citing the quality procedures followed. This section describes the representativeness and reliability of the source data, and the appropriateness of their use for the EJ performance measure. This section also includes the geographical extent of and spatial and temporal resolution (frequency of data collection and reporting) associated with the source data. Specifically, it identifies if the data are collected and reported at sufficient resolution (granularity) to isolate activities and/or impacts in communities with EJ concerns /vulnerable/populations (e.g., zip code, census tract, precinct, city, township, parish, county, etc.).
 - c) Source Data Reporting** – Provides the form/mechanism by which (1) EPA receives data from the original data sources and (2) EPA enters the data into an EPA information system, including the timing and frequency of data transmission.
 - d) Information Systems** - Describes each EPA information system utilized in the process of collecting,

calculating and/or reporting the results for this measure; identify whether the system contains source or transformed data; and discuss the extent to which the system meets EPA information system integrity standards.

- e) **Data Quality Procedures** - Describes EPA procedures for the oversight, review and quality assurance of the performance result and underlying data, from the time the original data source provides the data.
- f) **Data Oversight** - Identifies by title/position the EPA personnel responsible for overseeing (1) source data reporting and (2) the information systems utilized in producing the performance result and specifies the responsibilities of those personnel.
- g) **Calculation Methodology** - Provides the methodology used by EPA to transform original data into the EJ performance result to measure, in particular, how impacts on communities with EJ concerns and/or vulnerable populations are calculated. If appropriate, this includes if and how data are aggregated to national measures. This section addresses the following necessary elements: decision rules for selecting data, definitions of variables, explanation of calculations, explanation of assumptions, unit of measure, timeframe of result, and if applicable, description of changes to methodology.
- h) **Oversight and Timing of Results Reporting** - Identifies EPA personnel who (will) oversee final reporting by the National Program Office (NPO). Explains that individual's responsibilities specific to performance reporting oversight. Specifies the frequency of reporting, if other than annual.
- i) **Third-Party Audits** - If applicable, includes all relevant independent assessments of any part of the data flow for this performance measure.

MEASURES TECHNICAL INFORMATION

BLOOD LEAD LEVEL DISPARITIES

Office of Chemical Safety and Pollution Prevention (OSCPP)

1. Goal: Working toward eliminating disparities in childhood blood lead levels

2. Measure Text: By 2018, reduce the percent difference in the geometric mean blood lead level in low-income children 1-5 years old as compared to the geometric mean for non-low income children 1-5 years old to 10.0 percent.

Baseline is 28.4 percent difference in the geometric mean blood lead level in low-income children ages 1-5 years old as compared to the geometric mean for non-low income children 1-5 years old in 2007-2010 sampling period according to U.S. Center for Disease Control and Prevention's (CDC) National Health and Nutrition Examination Survey (NHANES).¹

3. Performance Measure Term Definitions:

- Geometric mean blood lead level: This term refers to a type of average which indicates the central tendency or typical value of a set of numbers. As used in this measure, it represents the central tendency of reported blood lead levels (micrograms of lead per deciliter of blood, or µg/dL) of children ages 1-5.
- Low-income children: As used in this measure, this term means children whose families are below the poverty income ratio (PIR) of 1.0. The poverty income ratio is a measure of income to the poverty threshold.
- Non-low-income children: Children whose families have a PIR above 1.0.

4. Relevance to Environmental Justice: This performance measure examines the disparities of blood lead levels in low-income children compared to non-low-income children so that EPA can track progress toward its long-term goal of eliminating childhood lead poisoning in harder to reach vulnerable populations. Low-income and minority children tend to live in areas that still face tremendous risk of lead exposure. Non-Hispanic Black children and children living in families below the poverty level have significantly higher risk factors for higher blood lead levels.² Low-income, minority communities still face aging plumbing infrastructure that could contaminate their drinking water, inhabit older housing that is more likely to contain lead-based paint, occupy areas near roadways contaminated from previously leaded gasoline and are more likely to be located near ongoing industrial activity or abandoned facilities.

EPA's Lead-Based Paint Risk Reduction program contributes to the goal of eliminating childhood lead poisoning by: (1) establishing standards governing lead hazard identification and abatement practices and maintaining a national pool of professionals trained and certified to implement those standards; (2) providing information to housing occupants so they can make informed decisions and take actions about lead hazards in their homes; and (3) establishing a national pool of certified firms and individuals who are trained to carry out renovation repair and painting projects while adhering to the lead-safe work practice standards and to minimize lead dust hazards created in the course of such projects.

Recent CDC data show significant progress in the continuing effort to eliminate childhood lead poisoning as a public health concern. The percent of children with elevated BLLs (≥ 5 µg/dL) has declined substantially (i.e., 86% from the 1999-2002 to the 2011-2014 NHANES survey cycles; 43% in the most recent survey cycle alone). However, the CDC has stated that no safe blood lead level in children has been identified. Even low levels of

¹ <http://www.cdc.gov/nchs/nhanes.htm>

² U.S. Centers for Disease Control and Prevention, 2011. *Healthy Homes and Lead Poisoning Prevention Program* (Report No. CS223978-C).

lead in blood have been shown to affect IQ, ability to pay attention, and academic achievement. Effects of lead exposure cannot be corrected. See the [2012 report](#) of the Advisory Committee to the Centers for Disease Control on Childhood Lead Poisoning Prevention and the [CDC's response](#) here.

Lead poisoning has had devastating consequences for the health of children under the age of six. Lead can be found in all parts of our environment – the air, the soil, the water, and even inside our homes – on walls coated with lead-based paint, and in everyday consumer products like toys, cosmetics, ceramics, solders, gasoline, and batteries. The long-term effects on lead exposure in a child can be severe and may include learning disabilities, decreased growth, behavior problems, impaired hearing and even brain damage. Lead exposure is not equal for all children.

According to the CDC, there is a 34.0 percent difference in the geometric mean blood lead level in low-income children ages 1-5 as compared to the geometric mean for non-low income children of the same age, based on information from 2011 to 2015 and greater than the 27 percent disparity estimated from the 2005-2008 survey cycle. Inner-city neighborhoods with lower family income levels often have higher rates of child lead poisoning than rural or suburban areas since some of the principal sources of lead in inner-city environments are chipping and peeling lead-based paint from old houses, past deposition in soil of lead from auto emissions, and industrial sources.

5. Mission and Organizational Context:

- **National Program Manager** - Office of Chemical Safety and Pollution Prevention
- **Managing Office** - Office of Pollution Prevention and Toxics
- **Strategic Goal** - Ensuring the Safety of Chemicals and Preventing Pollution. Reduce the risk and increase the safety of chemicals and prevent pollution at the sources.
- **Strategic Objective** - Ensure Chemical Safety. Reduce the risk and increase the safety of chemicals that enter our products, our environment, and our bodies.
- **Strategic Target** - By 2018, reduce the percent difference in the geometric mean blood lead level in low-income children 1-5 years old as compared to the geometric mean for non-low income children 1-5 years old to 10.0 percent.

6. Meta Data:

- a) Original Data Source** - The original data source is the CDC National Health and Nutrition Examination Survey (NHANES), which is recognized as the primary database in the United States for [national blood lead statistics](#). NHANES is a probability sample of the non-institutionalized population of the United States. The survey examines a nationally representative sample of approximately 5,000 men, women, and children each year located across the U.S.
- b) Source Data Collection** - Data are obtained by analysis of blood and urine samples collected from survey participants. Health status is assessed by physical examination. Demographic and other survey data regarding health status, nutrition, and health-related behaviors are collected by personal interview, either by self-reporting or, for children under 16 and some others (such as people with communications disabilities), as reported by an informant. Detailed interview questions cover areas related to demographic, socio-economic, dietary, and health-related questions. The survey also includes an extensive medical and dental examination of participants, physiological measurements, and laboratory tests. NHANES is unique in that it links laboratory-derived biological markers, such as blood and urine, to questionnaire responses and results of physical exams.

Quality procedures followed (by original data source): According to the CDC, the process of preparing NHANES data sets for release is as rigorous as other aspects of the survey. After a CDC contractor performs basic data cleanup, the CDC NHANES staff ensure that the data are edited and cleaned prior to release. NHANES staff devotes at least a full year after the completion of data collection to careful data

preparation. Additionally, NHANES data are published in a wide array of peer-reviewed professional journals. Background documentation is available at the [NHANES website](#) and the analytical guidelines are available at [this NHANES website](#).

Geographical extent of source data, if relevant: Data are collected to be representative of the U.S. population. The population data are extrapolated from sample data by the application of standard statistical procedures. Spatial detail of source data, if relevant: NHANES sampling procedures provide nationally representative data.

- c) Source Data Reporting** - EPA monitors the periodic issuance of NHANES reports and other data releases to obtain the data relevant to this measure.

NHANES is a continuous survey and examines a nationally representative sample of about 5,000 persons each year. These persons are located in counties across the country, 15 of which are visited each year. Files of raw data, containing measured blood lead levels in NHANES participants, are currently released to the public in two-year sets. CDC also periodically publishes [reports](#) containing summary statistics for lead and more than 200 other chemicals measured in NHANES.

- d) Information Systems** - There are no EPA systems utilized in collecting data for this measure as the Agency is able to secure the necessary data directly from NHANES reports and data releases.

- e) Data Quality Procedures** - EPA does not have any procedures for quality assurance of the underlying data as this function is performed by the CDC itself. CDC has periodically reviewed and confirmed EPA's calculation of NHANES summary statistics from the raw data files. The Agency determines the performance result for this measure by performing standard mathematical operations on reported NHANES data to derive geometric mean blood lead levels by income group and to estimate the disparity in those levels between low-income and non-low-income children.

- f) Data Oversight** - Chief, Planning and Assessment Branch, Environmental Assistance Division, Office of Pollution Prevention and Toxics.

g) Calculation Methodology -

- EPA simply uses the geometric mean blood lead level values for low-income and non-low-income children that are generated from NHANES survey data, as described below. EPA however, limits the age of the child to under six, based on the most sensitive receptor age group noted in Section 401 of the Toxic Substances Control Act of 1976 (TSCA).
- EPA performs standard mathematical operations on the published NHANES survey data. After calculating geometric mean blood lead levels by income group from the public use data files, EPA (1) determines the absolute disparity in blood lead level values between the two groups of children by subtracting the lower value from the higher; (2) averages the values for the two groups; and (3) divides the absolute disparity (i.e., the result of calculation (1) by the average of the values (i.e., the result of calculation (2)), to express the disparity as a percent difference between the blood lead levels of the two groups.
- The performance result is computed from data released by the CDC in sets covering the particular time period over which sampling occurs. Thus, the timeframe that applies to the measured result is the same period for which the NHANES data are released. It is not a simple snapshot at a specific moment in time.

- h) Oversight and Timing of Results Reporting** - Planning and Accountability Lead in the Resource Management Staff in the Office of Program Management Operations. Reporting semiannually: mid-year and end-of-year, but subject to a data lag due to the periodic nature of NHANES reporting.

- i) Third-Party Audits** - Report of the NHANES Review Panel to the NCHS Board of Scientific Counselors.
- [Cover letter](#)
 - [Report](#)

SMALL WATER SYSTEMS

Office of Water (OW)

1. **Goal:** All people served by community water systems have drinking water that meets applicable health based standards. In working toward this goal, we will place special emphasis on addressing drinking water challenges in underserved communities.
2. **Measure:** Number and percent of small community water systems and non-transient non-community water systems with repeat health-based violations of key contaminants.

3. Performance Measure Term Definitions:

- Community water systems - The U.S. Environmental Protection Agency (EPA) defines a community water system (CWS) as a public water system that serves at least 15 service connections used by year-round residents or regularly serves at least 25 year-round residents. Since 2012, there have typically been between 825-890 systems serving populations less than 3,300 persons with repeat health-based violations each year.
- Repeat health-based drinking water violations - Repeat violations are defined as repeats of the same combination of violation (e.g., total coliform rule MCL) and contaminant type (e.g., TCR) for a CWS. If a particular combination of violation and contaminant type occurs at a particular system more than once in a Fiscal Year, this constitutes a repeat violation. For the purposes of this analysis, only repeat health-based TCR, Nitrates, and surface water treatment rule violations were included. The analysis is based on Safe Drinking Water Information System-Federal (SDWIS-FED) data within the previous 12 months year ending June 30th. Systems must serve fewer than 3,300 people. The same violation code and contaminant type combination must occur more than once in the above 12 month period.

4. **Relevance to Environmental Justice:** It is EPA's goal that all Americans throughout the nation have access to safe, reliable drinking water. However, EPA recognizes that small community water systems (i.e., those systems that serve fewer than 3,300 people) face a number of unique challenges that make universal access to safe drinking water more challenging. Of the more than 51,500 community water systems nationwide that supply drinking water to more than 95 percent of the U.S. population, the vast majority (82 percent) serve fewer than 3,300 people. These small systems are often disproportionately impacted by technical, managerial, and financial capacity challenges. In addition, many of these small drinking water systems serve disadvantaged communities. An EPA review of county income figures for the community water systems that had repeat health-based violations for 2012-2014 found that about 62 percent of those communities have average household incomes less than twice the national poverty level.

EPA continually strives to meet the goal of 100 percent access to clean, safe drinking water for all Americans served by community water systems. By targeting reductions in repeat health-based violations for small drinking water systems, the Agency is working to improve public health protection for small, disadvantaged communities.

5. Mission and Organizational Context:

- **National Program Manager** - Office of Water
- **Managing Office** - Office of Groundwater and Drinking Water
- **Strategic Goal** - Protecting America's Waters
- **Strategic Objective** - Protecting Human Health

- **Strategic Target** - By 2020, reduce the number of community water systems serving populations less than 3,300 persons that had repeat health-based drinking water violations during the year by 10 percent from a 2014 baseline.

6. Meta Data:

a) Original Data Source - EPA

- b) Source Data Collection** - The EPA Office of Ground Water and Drinking Water (Headquarters) calculates this measure using data reported in the SDWIS-FED and provides the results to the EPA regional offices.

Data are provided by agencies with primacy (primary enforcement authority) for the Public Water System Supervision (PWSS) program. These agencies are either: States, EPA for non-delegated states or territories, and the Navajo Nation Indian tribe, the only tribe with primacy. Primacy agencies collect the data from the regulated water systems, determine compliance, and report a subset of the data to EPA (a subset of the inventory data and summary violations). State certified laboratories report contaminant occurrence to states that, in turn, determine exceedances of maximum contaminant levels or non-compliance with treatment techniques and report these violations to EPA. Under the drinking water regulations, water systems must use approved analytical methods for testing for contaminants.

The States or Primacy Agencies report to EPA using SDWIS, basic information on each water system, as well as “violation” and enforcement information. This measure includes federally-regulated contaminants of the following violation types: Maximum Contaminant Level, Maximum Residual Disinfection Limit, and Treatment Technique violations. It includes any violations from currently open and closed community water systems (CWSs) that overlap any part of the most recent four quarters.

EPA uses this information to determine if and when it needs to address non-compliant systems, oversee state drinking water programs, track contaminant levels, respond to public inquiries, and prepare national reports. EPA also uses this information to evaluate the effectiveness of its programs and regulations, and to determine whether new regulations are needed to further protect public health.

The development of a drinking water metric intended to improve public health protection for drinking water consumers in small disadvantaged communities must reconcile limitations in data maintained in EPA’s state drinking water information system (SDWIS). SDWIS is the sole national database containing the historic non-compliance information for each of the nation’s public water systems. SDWIS maintains basic system data including system size, source water type, treatment, and contact information. Unfortunately, SDWIS does not contain any community household income information nor maintains any information identifying a community as disadvantaged.

EPA routinely tracks the number of systems with repeat health-based violations of drinking water regulations as one of several compliance metrics intended to encourage improvements in system performance and public health protection for consumers. Systems that have multiple or repeat health-based violations are implied to have chronic/systemic issues needing increased attention by water systems and technical assistance providers.

- c) **Source Data Reporting** - Public Water System Supervision (PWSS) [Regulation-Specific Reporting Requirements Guidance](#).

System, user, and reporting requirements documents can be found on the [EPA website](#).

- d) **Information Systems** - SDWIS/STATE, a software information system jointly designed by states and EPA, to support states as they implement the drinking water program. SDWIS/STATE is an optional data base application available for use by states and EPA regions to support implementation of their drinking water programs.

U.S. EPA, Office of Ground Water and Drinking Water. Data and Databases. Drinking Water Data & Databases – SDWIS/STATE, July 2002. Information available on the [EPA website](#). Documentation is also available at the [Association of State Drinking Water Administrators website](#).

SDWIS/Fed Data Reliability Action Plan [2006 Drinking Water Data Reliability Analysis and Action Plan (DRAP), EPA-816-R-07-010 March 2008]. The DRAP contains the processes and procedures and major activities to be employed and undertaken for assuring the data in SDWIS meet required data quality standards. This plan has three major components: assurance, assessment, and control.

[Office of Water Quality Management Plan](#)

- e) **Data Quality Procedures** - The data quality review is based on the recommendations of the Data Quality Workgroup and on the Drinking Water Strategy for monitoring data. There are quality assurance manuals for states and Regions, which provide standard operating procedures for conducting routine assessments of the quality of the data, including timely corrective action(s). Reporting requirements can be found on the [EPA website](#). SDWIS/FED edit checks built into the software to reject erroneous data.

EPA offers the following to reduce reporting and database errors: 1) training to states on data entry, data retrieval, compliance determination, reporting requirements and error correction, 2) user and system documentation produced with each software release and maintained on EPA's web site, 3) specific error correction and reconciliation support through a troubleshooter's guide, 4) a system-generated summary with detailed reports documenting the results of each data submission, 5) an error code database for states to use when they have questions on how to enter or correct data, and 6) user support hotline available 5 days a week.

- f) **Data Oversight** - The Infrastructure Branch Chief is responsible for overseeing source data reporting. The Associate Director of Drinking Water Protection is responsible for overseeing information systems utilized in producing performance results.
- g) **Calculation Methodology** - The EPA Office of Ground Water and Drinking Water (headquarters) calculates this measure using data reported in the Safe Drinking Water Information System-Federal (SDWIS-FED) and provides the results to EPA regions. This measure includes federally-regulated contaminants of the following violation types: Maximum Contaminant Level, Maximum Residual Disinfection Limit, and Treatment Technique violations. It includes any violations from currently open and closed community water systems (CWSs) that overlap any part of the most recent four quarters.
- h) **Oversight and Timing of Results Reporting** - The Director for the Office of Groundwater and Drinking Water and the Evaluation and Accountability Team Leader for the Office of Water are responsible for coordinating the reporting of all measures for the Office of Water.

TRIBAL DRINKING WATER SYSTEMS

Office of Water (OW)

1. Goal: All people served by community water systems have drinking water that meets applicable health based standards. In working toward this goal, we will place special emphasis on addressing drinking water challenges in underserved communities.

2. Measure: Percent of population in Indian country served by community water systems with drinking water that meets all applicable health-based drinking water standards.

3. Performance Measure Term Definitions:

- The definition of [Indian country](#) is that used by the U.S. Department of Justice.

Community water systems - The U.S. Environmental Protection Agency (EPA) defines a community water system (CWS) as a public water system that serves at least 15 service connections used by year-round residents or regularly serves at least 25 year-round residents. In FY2011 737 CWSs in Indian country regulated by the EPA and Navajo Nation provided water to more than 918 thousand persons.

- Safe drinking water that meets all health-based drinking water standards does not exceed a maximum contaminant level (MCL) nor violate a treatment technique.

4. Relevance to Environmental Justice: It is EPA's goal that all Americans throughout the nation have safe, reliable drinking water. However, EPA recognizes that many tribal drinking water systems face unique challenges that make universal safe drinking water more challenging. Tribal water systems are often disproportionately impacted by technical, managerial, and financial capacity challenges, which affect their ability to achieve and maintain system sustainability. Additionally, tribal systems can face compliance challenges and may lack the ability to develop long-term planning efforts due to a number of factors, such as not having a governance structure, lack of full-time certified operator, high turnover, financial limitations, and/or overall difficulty with accessing technical information.

Such challenges can lead to disproportionate health-based violations in tribal drinking water systems, when compared to similar small systems outside of Indian country. According to FY2015 data, 5.9 percent of tribal public water systems serving less than 3,300 received a total coliform MCL violation, compared with 3.8 percent of the non-tribal systems. Additionally, 87 percent of the tribal community water systems served water with no health based violation in FY2015, compared with 90 percent of the non-tribal community water systems.

The EPA continually strives to deliver clean, safe drinking water 100 percent of the time for all Americans served by community water systems by targeting its efforts in Indian country to ensure that tribal drinking water systems provide drinking water that meets all applicable health-based drinking water standards in an effort to improve public health protection for tribal communities.

5. Mission and Organizational Context:

- **National Program Manager** - Office of Water
- **Managing Office** - Office of Groundwater and Drinking Water
- **Strategic Goal** - Protecting America's Waters
- **Strategic Objective** - Protecting Human Health

- **Strategic Target** - By 2020, ensure at least 92 percent of the population in Indian country served by community water systems receive drinking water that meets all applicable health-based drinking water standards.

6. Meta Data:

- a) **Original Data Source** - EPA, except for community water systems serving the Navajo Nation, because the Navajo Nation has primacy responsibility for implementing the Safe Drinking Water Act.
- b) **Source Data Collection** - The EPA Office of Ground Water and Drinking Water (Headquarters) calculates this measure using data reported in the Safe Drinking Water Information System-Federal (SDWIS-FED) and provides the results to EPA Regions and the Navajo Nation.

This measure includes federally-regulated contaminants of the following violation types: Maximum Contaminant Level, Maximum Residual Disinfection Limit, and Treatment Technique violations. It includes any violations from currently open and closed community water systems (CWSs) that overlap any part of the most recent four quarters.

- c) **Source Data Reporting** - Public Water System Supervision (PWSS) [Regulation-Specific Reporting Requirements Guidance](#). System, user, and reporting requirements documents can be found on the [EPA website](#).
- d) **Information Systems** - SDWIS/STATE, a software information system jointly designed by states and EPA, to support states and EPA Regions as they implement the drinking water program. SDWIS/STATE is an optional data base application available for use by states and EPA regions to support implementation of their drinking water programs. EPA Region 9 utilizes an access database system (DIME) to collect and report on tribal community water systems in Region 9.

[SDWIS/FED User and System Guidance Manuals](#) (includes data entry instructions, data On-line Data Element Dictionary-a database application, Error Code Data Base (ECDB) - a database application, users guide, release notes, etc.).

[Specific rule reporting requirements documents](#) are accessed via the regulations, guidance, and policy documents.

SDWIS/Fed does not have a Quality Assurance Project Plan. The SDWIS/FED equivalent is the Data Reliability Action Plan [2006 Drinking Water Data Reliability Analysis and Action Plan, EPA-816-R-07-010 March 2008] The DRAP contains the processes and procedures and major activities to be employed and undertaken for assuring the data in SDWIS meet required data quality standards. This plan has three major components: assurance, assessment, and control.

[Office of Water Quality Management Plan](#)

- e) **Data Quality Procedures** - The Office of Ground Water and Drinking Water is modifying its approach to data quality review based on the recommendations of the Data Quality Workgroup and on the Drinking Water Strategy for monitoring data.

There are quality assurance manuals for states and Regions, which provide standard operating procedures for conducting routine assessments of the quality of the data, including timely corrective action(s).

Reporting requirements can be found on the [EPA website](#).

SDWIS/FED edit checks built into the software to reject erroneous data. EPA offers the following to reduce reporting and database errors: 1) training to states on data entry, data retrieval, compliance determination, reporting requirements and error correction, 2) user and system documentation produced with each software release and maintained on EPA's web site, 3) Specific error correction and reconciliation support through a troubleshooter's guide, 4) a system-generated summary with detailed reports documenting the results of each data submission, 5) an error code database for states to use when they have questions on how to enter or correct data, and 6) User support hotline available 5 days a week.

- f) **Data Oversight** - The Drinking Water Protection Division Director oversees the source data reporting and the information systems producing the performance result.
- g) **Calculation Methodology** - SDWIS/STATE, a software information system jointly designed by states and EPA, to support states as they implement the drinking water program. SDWIS/STATE is an optional data base application available for use by states and EPA regions to support implementation of their drinking water programs.

U.S. EPA, Office of Ground Water and Drinking Water. Data and Databases. [Drinking Water Data & Databases – SDWIS/STATE, July 2002](#).

Documentation is also available at the [Association of State Drinking Water Administrators website](#)

SDWIS/Fed does not have a Quality Assurance Project Plan. The SDWIS/FED equivalent is the Data Reliability Action Plan (DRAP) 2006 Drinking Water Data Reliability Analysis and Action Plan, EPA-816-R-07-010 March 2008. The DRAP contains the processes and procedures and major activities to be employed and undertaken for assuring the data in SDWIS meet required data quality standards. This plan has three major components: assurance, assessment, and control.

[Office of Water Quality Management Plan](#)

- h) **Oversight and Timing of Results Reporting** - The Evaluation and Accountability Team Leader is responsible for overseeing the final reporting for the Office of Water.

FINE PARTICLE AIR POLLUTION

Office of Air and Radiation (OAR)

- 1. Goal:** Achieve air quality that meets the fine particle pollution national ambient air quality standards (NAAQS) for all low-income populations as early as practicable and no later than their statutory attainment date (which for most areas will be 2021 or sooner). Low-income populations are among those most at-risk to adverse health effects from exposure to fine particle pollution.

2. Measures:

- Percentage of low-income people living in counties with monitors measuring concentrations of PM_{2.5} that meet the 2012 annual and 2006 24-hour PM_{2.5} NAAQS.

This measure evaluates each year the percentage of low-income people living in counties with monitors measuring concentrations of fine particle pollution (PM_{2.5}) that meet the 2006 24-hour and the 2012 annual PM_{2.5} NAAQS. The baseline period for the measure will be 2006-2008 (i.e., the 3-year period used for designations for the 2006 24-hour PM_{2.5} NAAQS). Changes since that time will reflect the effectiveness of strategies designed to reduce particle pollution. The goal is to increase this percentage over time and to reach 100 percent by 2025. Such a trend would demonstrate that state efforts to attain and maintain these standards are working and that low-income populations are benefitting.

- The average county-level design value for counties with monitors measuring PM_{2.5} concentrations not meeting the PM_{2.5} NAAQS.

This second measure provides information on the improvement in air quality in counties not meeting the PM_{2.5} NAAQS. It relies on the calculated design value, which is a statistic that describes the air quality status of a given location relative to the level of the NAAQS.

- The difference in attainment of the standard between low-income and non-low-income areas.

Based on current (2012-2014) air quality data, among the low-income population that lives in counties with PM_{2.5} monitors, about 83 percent live in counties that meet the 2012 annual and 2006 24-hour PM_{2.5} NAAQS. This compares to about 85 percent of the total population living in counties that meet the PM_{2.5} NAAQS and reflects a 40 percent improvement since 2006-2008.

The baseline period for these measures is 2006-2008. Changes since that time reflect the effectiveness of strategies designed to reduce particle pollution. The measure will be evaluated two ways:

- Increasing percentages of low-income people living in areas where the air quality meets the fine particle pollution standards will indicate improvements in air quality for these vulnerable populations; and
- Percentage of low-income people compared to the general population (total percentage of people living in counties with monitors measuring PM_{2.5} concentrations that meet the 2006 24-hour and the 2012 annual standards), which will allow EPA to see how the rate of change in low-income communities compares to changes in the broader community.

3. Performance Measure Term Definitions:

- Fine particulate matter (PM_{2.5}): Particles with a mass median diameter of 2.5 microns or less.
- Annual PM_{2.5} design value: the highest reported site-level annual standard air quality statistic, i.e. the 3-year average annual mean concentration of PM_{2.5}.
- 24-Hour PM_{2.5} design value: The highest reported site-level annual standard air quality statistic, i.e. the 3-year average 98th percentile concentration of PM_{2.5}.
- County-level design value: The highest site-level design value in a county

- Particle pollution: Also called particulate matter or PM, is a complex mixture of extremely small particles and liquid droplets in the air. When inhaled, these particles can reach the deepest regions of the lungs. Exposure to particle pollution is linked to a variety of significant health problems. Particle pollution monitors are placed in areas where high concentrations are expected.
- Fine particles: Particles with a diameter equal to or less than 2.5 microns $PM_{2.5}$ - can be emitted directly into the atmosphere, such as black carbon emissions from a diesel engine or smoke from a fire, or they can form from chemical reactions of precursor gases including sulfur dioxide, nitrogen dioxide, certain volatile organic compounds, and ammonia. Emission sources include power plants, gasoline and diesel engines, wood combustion, high-temperature industrial processes such as smelters and steel mills, and forest fires. Fine particle pollution is monitored throughout the country to identify whether an area is meeting EPA's national ambient air quality standards.
- Low-Income populations: To assure adequate coverage of the at-risk population in the metrics, we define low-income as two times the poverty level. Low-income status is associated with low educational attainment or disadvantageous residential location, and these factors can also contribute to an individual's higher exposure to air pollution. Low-income populations are among the populations that are at-risk for adverse health effects from exposure to $PM_{2.5}$. Low-income people have been generally found to have a higher prevalence of pre-existing diseases, limited access to medical treatment, and increased nutritional deficiencies, which can increase their risk of particle pollution-related effects.
- Counties included in measure: The current monitored counties with at least one site within them meeting the 2012 NAAQS for $PM_{2.5}$.
- National Ambient Air Quality Standards: The Clean Air Act requires EPA to set National Ambient Air Quality Standards for pollutants considered harmful to public health and the environment. EPA has set [National Ambient Air Quality Standards](#) for six principal pollutants, which are called "criteria" pollutants. Particulate matter (of which $PM_{2.5}$ is one form) is one of these six pollutants.

4. Relevance to Environmental Justice: The impacts of fine particulate matter pollution are not evenly shared across all population groups. Low-income populations are among those most at-risk to adverse health effects from exposure to $PM_{2.5}$. They have been generally found to have a higher prevalence of pre-existing diseases, limited access to medical treatment, and increased nutritional deficiencies, which can increase their risk of particle pollution-related effects. In addition, low-income populations often suffer from low educational attainment or disadvantageous residential location- factors that can also contribute to an individual's higher exposure to air pollution.

5. Mission and Organizational Context:

- **National Program Manager** - OAR
- **Managing Office** - Office of Air Quality Planning and Standards/Outreach and Information Division
- **Strategic Goal** - Addressing Climate Change and Improving Air Quality
- **Strategic Objective** - Improve Air Quality

6. Meta Data:

a) Original Data Source:

- State and local agency data are from State and Local Air Monitoring Stations (SLAMS).
- Population data are from the Census Bureau/Department of Commerce (2010 Census)

b) Source Data Collection:

- Ambient air quality data: Field monitoring; survey
- EPA QA Requirements/Guidance Governing Collection: To ensure quality data, the SLAMS are required to meet the following: 1) each site must meet network design and site criteria; 2) each site must provide adequate QA assessment, control, and corrective action functions according to minimum program requirements; 3) all sampling methods and equipment must meet EPA reference or equivalent requirements; 4) acceptable data validation and record keeping procedures must be followed; and 5) data from SLAMS must be summarized and reported annually to EPA. Finally, there are system audits that regularly review the overall air quality data collection activity for any needed changes or corrections. Further information is available on the Internet at <https://www3.epa.gov/ttn/amtic/quality.html> and through United States EPA's Quality Assurance Handbook (EPA-454/R-98-004 Section 15).
- Geographical Extent of Source Data: National
- Spatial Detail Covered By the Source Data: 486 counties in the 50 continental States plus D.C.

c) Source Data Reporting - Agencies submit air quality data to the Air Quality System (AQS) thru the Agency's Central Data Exchange (CDX). CDX is intended to be the portal through which all environmental data coming to or leaving the Agency will pass. Additional information can be found here: <http://www.exchangenetwork.net/data-exchange/aqs/>

d) Information Systems:

- The Air Quality System (AQS) stores ambient air quality data used to evaluate an area's air quality relative to the National Ambient Air Quality Standards (NAAQS).
- All annual mean concentration data used in the performance analysis were extracted from the AQS.

e) Data Quality Procedures:

The Air Quality System (AQS) QA/QC process also involves participation in the EPA's National Performance Audit Program (NPAP), system audits, and network reviews. Please see www.epa.gov/ttn/amtic/npaplist.html for more information.

f) Data Oversight:

- National Air Data Group (Outreach and Information Division, OAQPS) oversees operations of the Air Quality System, the database used to store and deliver the source data.
- Air Quality Monitoring Group (Air Quality Assessment Division (AQAD), OAQPS) oversees the monitoring and quality assurance of the source data.
- Air Quality Analysis Group (AQAD, OAQPS) oversees the transformation and data reporting aspects associated with the calculation of this performance measure.

g) Calculation Methodology - Low-income populations living in counties with PM_{2.5} monitoring data showing attainment of both the 24-hour and annual primary NAAQS divided by the population of low-SES living in all counties with PM_{2.5} monitoring data. The percentage resulting from this calculation can be expressed as a percentage of the low-income population living in areas with ambient concentrations below the 24-hour and annual PM_{2.5} NAAQS. As PM_{2.5} air quality improves, this percentage can be expected to increase.

h) Oversight and Timing of Results Reporting:

- Community and Tribal Programs Group, Outreach and Information Division, OAQPS, OAR is directly responsible for the oversight and timing of this EJ2020 performance measure.
- Air Quality Analysis Group, Air Quality Assessment Division, OAQPS, OAR is directly responsible for the calculations associated with this performance measure.
- Ambient Standards Group, Health and Environmental Impacts Division, OAQPS, OAR is directly responsible for setting the PM_{2.5} standards.

HAZARDOUS WASTE SITES

Office of Land and Emergency Management (OLEM)

- 1. Goal:** Reduce human exposure to contamination at hazardous waste sites, with emphasis on minority, low-income and vulnerable communities.
- 2. Measure:** Number and percent of Resource Conservation Recovery Act (RCRA) Corrective Action Program facilities and Superfund Remedial Program contaminated sites in communities where human exposures to contamination are under control.
- 3. Performance Measure Term Definitions:**
 - Sites are listed on the National Priorities List upon completion of Hazard Ranking System (HRS) screening, public solicitation of comments about the proposed site, and final placement of the site on the NPL after all comments have been addressed. The NPL primarily serves as an information and management tool. It is a part of the Superfund cleanup process and is updated periodically.
 - Sites are defined as Human Exposure Under Control (HEUC) when assessments for human exposures indicate there are no unacceptable human exposure pathways and the Region has determined the site is under control for current conditions site wide. This is also a Government Performance and Results Act (GPRA) performance measure.
 - The criteria for determining the Site-Wide Human Exposure status at a site are found in the [Superfund Environmental Indicator Guidance Human Exposure Revisions March 2008](#).
 - On a biennial basis, EPA will examine each of the 799 baseline facilities and sites where human exposure is not under control using EJSCREEN.
 - EPA will report on the number of facilities and sites with human exposures under control, the number remaining, and the percent with human exposures under control in communities with environmental justice concerns as well as in these communities as a proportion of the totals for all sites and facilities.
- 4. Relevance to Environmental Justice:** A measure such as the “Human exposure not under control” is important because the ultimate goal and mission of the Agency is to protect human health and the environment. This measure, along with the Executive Order 12898, draws attention to the plight of overburdened and underserved communities surrounded by hazardous waste sites. Because minority and low-income populations are highly concentrated in neighborhoods with multiple facilities, they continue to be particularly vulnerable to the various negative impacts of hazardous waste facilities. For example, a key finding of the report *Toxic Wastes and Race at Twenty 1987- 2007*³ report found that minority populations make up the majority of those living in host neighborhoods within 3 kilometers (1.8 miles) of the nation’s hazardous waste facilities. This measure, along with the Executive Order 12898, draws attention to the plight of overburdened and underserved communities surrounded by hazardous waste sites. EPA’s goal to ensure that controlling exposure is important because the ultimate goal and mission of the Agency is to protect human health and the environment.
- 5. Mission and Organizational Context:**
 - **National Program Manager** - Office of Land and Emergency Management
 - **Managing Office(s)** - Office of Superfund Remediation and Technology Innovation (OSRTI) and the Office of Resource Recovery and (ORCR)

³ Bullard, Robert D., Mohai, Paul, Saha, Robin, Wright, Beverly. 2007. [Toxic Wastes and Race at Twenty: 1987-2007](#). (Cleveland, OH: United Church of Christ).

- **Strategic Goal** - Cleaning Up Communities and Advancing Sustainable Development
- **Strategic Objective** - Restore Land
- **Strategic Target** - By 2018, increase the number of Superfund sites and RCRA facilities where human exposure and toxins
- **Key Performance Indicator** - Advancing Cleanups: Number of sites protective for people [across cleanup programs, will use superfund, superfund alternative sites that are protective for people/human exposure under control, and RCRA for national calculation.

6. Meta Data:

a) **Original Data Source** - EPA

- b) Source Data Collection** - The Office of Land and Emergency Management (OLEM)'s Superfund Program (formally Office of Solid Waste and Emergency Response) and the Office of Resource Conservation and Recovery (ORCR) also known as Resource Conservation and Recovery Act (RCRA).
- Superfund remedial site experts make the Human Exposure determinations and enter the data into the Superfund Enterprise Management System (SEMS). The determinations are reviewed by (and in some cases entered by) remedial program managers. Following this, the Superfund Headquarters Environmental Indicator Data Sponsor reviews the data to assure compliance with applicable guidance and policy, and to assure that the determinations match environmental conditions on site as they are reported. Each determination is required to be reviewed in the regional office at least once a year and any time a change in site conditions would warrant a revision of the measure. The data are able to be associated with communities with EJ concerns thru analysis of basic geographic information (e.g., zip code, census tract, precinct, city, township, parish, county, etc.).
 - The RCRA Corrective Action Human Exposures Under Control Environmental Indicator (HHEI) determination for a facility is made and documented by either a RCRA authorized state program or a RCRA region. The Human Exposure Under Control Environmental Indicator Form is used to document that the facility has met the criteria and the form is placed in the facility file, and sent to the Region. When a determination and documentation is complete, the facility determination is recorded in RCRAInfo, EPA's national data system for the RCRA subtitle C program.

c) **Source Data Reporting:**

- The Superfund Enterprise Management System (SEMS) is EPA's official database for tracking hazardous waste sites, cleanup activities, and other programmatic functions conducted by the Superfund Remedial Program. SEMS provides the Agency and interested members of the public with up-to-date information about the status of cleanup progress at hazardous waste sites across the nation.
- EPA regional site experts enter the data into SEMS using a module in the system specific to the human exposure measure. The module requires the user to provide specific information regarding the exposure conditions on site; the nature of that information determines which of the several exposure categories the site is assigned to. The data is transmitted immediately, as authorized users of this SEMS module have real time access to any change in the module.
- RCRAInfo data is generated and entered by authorized states and EPA Regions. The HHEI determination (which is then entered into RCRAInfo) is made by EPA Regions or authorized State programs. The determination is documented with a form which is then filed in the facility file and sent to the Region. Data is entered into RCRAInfo two ways:
 - Via direct data entry into RCRAInfo via the application; or

- States which have their own data systems or tracking mechanisms, can provide a flat file or xml download of their data via CDX and the Exchange Network to automatically load into RCRAInfo. This process is called “Translation.”
- Data is entered directly into RCRAInfo on a daily basis. Translators can provide the data via the translation process at any interval they desire (daily, weekly, or monthly) but are asked to translate data at a minimum monthly.

d) Information Systems:

- The source data is contained within SEMS, which is the official system of record for the Superfund Program. Data entry is performed in the Site Management module of the SEMS, and reporting is done from the Reporting Tool module. The system conforms to all Agency standards with respect to security and data integrity. Business processes and data quality are directly supported by the Superfund Program Implementation Manual and regional Data Entry Control Plans, which are updated annually.
- **RCRAInfo** is EPA's comprehensive information system, providing access to data supporting the [Resource Conservation and Recovery Act \(RCRA\) of 1976](#) and the [Hazardous and Solid Waste Amendments \(HSWA\) of 1984](#).
- The RCRAInfo system enables cradle-to-grave waste tracking of many types of information regarding the regulated universe of RCRA hazardous waste handlers. RCRAInfo characterizes facility status, regulated activities, and compliance histories in addition to capturing detailed data on the generation of hazardous waste from large quantity generators and on waste management practices from treatment, storage, and disposal facilities.
- Using cutting-edge technology and a simple architecture, RCRAInfo provides a convenient user interface for program staff and managers. The system encourages development of in-house expertise for controlled cost and sports the ability to use commercial off-the-shelf software to do ad-hoc reporting directly from database tables.

e) Data Quality Procedures:

- Each determination is reviewed by the appropriate remedial program manager. Following this, the Headquarters Data Sponsor reviews each determination to assure compliance with applicable guidance and policy, and to assure that the determinations match environmental conditions on site as they are reported. When the Headquarters Data Sponsor determines that the data provided by the original data source (in this case, the EPA regional office) meets the criteria listed in the applicable guidance, the site determination is approved.
- The RCRA Corrective Action Program started the tracking of the [Human Exposure Environmental Indicator](#) with [Environmental Indicator Guidance](#) in 1999, which included a form which is to be completed to document the determination. The form, if completed by a state authorized program is sent to the Region.
- RCRA corrective action program had communicated to regional offices and authorized states that if a project manager becomes aware of changes to the site which would change the HEEI determination should be changed to reflect current conditions.

f) Data Oversight:

- The person responsible for overseeing national source data reporting for the Human Exposure measure is the Headquarters Environmental Indicator Data Sponsor. This person's responsibilities are listed above. The person responsible for overseeing the information systems used in producing the performance result is the SEMS System Owner. The system owner is responsible for overall project management responsibilities for SEMS, including budget and schedule. The system owner is ultimately responsible for the function and security of the system, and assumes responsibility for the system after delivery and installation, during operation, maintenance, and disposal.

- The HHEI determinations are conducted by RCRA program project managers and approved by their supervisors. HHEIs prepared by states are reviewed by EPA Regions. RCRAInfo meets EPA information system integrity standards and all data standards for data elements contained in the system. The RCRAInfo application and translation process has data edit checks and business rule verification to ensure accurate data is being entered. Oversight of this data is performed by the Regions and HQ and as part of GPRA tracking.
- The reporting of the RCRA HHEI data for the EJ measure is prepared by staff and overseen by division level management.





EPA 300-P-16-001

May 2016