

# United States 2018 Stockholm Junior Water Prize

## State Winners

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The following state Winner have advanced to the U.S. Stockholm Junior Water Prize national competition, June 15-17, 2018 at the University of North Carolina at Charlotte

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### **Alabama**

#### **Noel Lange**

Development of an Innovative Strategy to Protect  
the Aquatic Environment from Household Plastic Microfibers  
Teacher – Jacque Middleton  
Sponsored by the Alabama Water Environment Association

### **Alaska**

#### **Helen Laird**

A comparison of nearshore marine microplastic  
and shore plastic levels in the Aleutian Islands  
Interior Distance Education of Alaska  
Science Teacher – Katherine Laird  
Sponsored by the Alaska Water Wastewater Management Association

### **Arizona**

#### **Ryan Widjaja, Lindsay Chen, and Gabriel Wang**

Reducing Brine Waste in Reverse Osmosis (RO) Systems with Distillation  
Hamilton High School  
Science Teacher – Sara Loutzenheiser  
Sponsored by the AZ Water

### **Arkansas**

#### **Dhruv Modi**

Water-Oil Separation via PVDF  
Superhydrophobic/Superoleophilic Membranes  
Little Rock Central High School  
Science Teacher – Patrick Foley  
Sponsored by the Arkansas Water Environment Association

### **California**

#### **Visala Tallavarjula**

Irrigation Water Usage Efficiency Improvement by Modification  
of Root Zone Soil Properties Using Carbon Sequestration  
Adrian Wilcox High School  
Science Teacher – Naleeni Srinivasan  
Sponsored by the California Water Environment Association

**Colorado**

**Isla Anderson**

Anthropogenic Induction of Antibiotic

Resistance by Sulfamethoxazole

North High School

Science Teacher – Munira Lantz & Melissa Brace

Sponsored by the Rocky Mountain Water Environment Association

**Connecticut**

**Verna Yin**

Filtration of Heavy Metals from Drinking Water with Used  
Coffee Grounds Embedded in Discarded Polyurethane Sponges

Greenwich High School

Science Teacher – Andrew Bramante

Sponsored by the New England Water Environment Association

**Delaware**

**No Qualifying Entries**

Sponsored by the Chesapeake Water Environment Association

**District of Columbia**

**No Qualifying Entries**

Sponsored by the Chesapeake Water Environment Association

**Florida**

**Rohan Jakhete**

Electro-Oxidation of ethinylestradiol: A Novel Model for Removing  
Endocrine-Disrupting Compounds from Wastewater Effluent

South Fork High School

Science Teacher – David Hill

Sponsored by the Florida Water Environment Association

**Georgia**

**Jessica Mitchell**

A Macro Micro Problem: Analyzing Microplastic  
Concentrations of the Chattahoochee River

South Forsyth High School

Science Teacher – Melissa Smith

Sponsored by the Georgia Association of Water Professionals

**Hawaii**

**Evelyn Haase**

Developing a pH Sensor to Monitor Ocean Acidification: Year 3

Molokai High School

Science Teacher – Robert Shizuma

Sponsored by the Hawaii Water Environment Association

**Idaho**

**Alexander Howard**

Investigating the Water Filtration Capabilities  
of Carbon-Coated Oyster Shells

Timberline High School

Science Teacher – Annie Schmidt

Sponsored by the Pacific Northwest Clean Water Association

**Illinois**

**Robert Szymczyk**

The Effects of Water Pollution on Mosquitoes

Lane Tech College Prep High School

Science Teacher – Lucy Young

Sponsored by the Illinois Water Environment Association

**Indiana**

**Victor Karwacinski and Mary Sgroi**

Non-Thermal, Atmospheric Plasma: A Means of Water Purification

Trinity School at Greenlawn

Science Teacher – Lynda Seasley

Sponsored by the Indiana Water Environment Association

**Iowa**

**Pearl Krieger-Coble**

Analysis of Carbonic Acid impact

on *Neurina natalensis* and *Daphnia magna*

Winfield-Mt. Union Community School District

Sponsor Teacher – William Hansen

Sponsored by the Iowa Water Environment Association

**Kansas**

**Paige Claassen and Deserae Schwindt**

Forage Quality Analysis for Sandhills Wetland Site

Rolla High School

Science Teacher – Zeta Greene

Sponsored by the Kansas Water Environment Association

**Kentucky**

**Anjali Chadha**

Development of a Fully Automated 3D Printed

IoT Sensor for Arsenic Detection in Groundwater

duPont Manual High School

Science Teacher – Glenn Zwanzig

Sponsored by the Kentucky-Tennessee Water Environment Association

**Louisiana**

**Sofia Stuart**

The Effect of Different Levels of Current

during Membrane Capacitive Deionization

on the Concentration of Ions in Water

St. Joseph's Academy

Science Teacher – Jacqueline Savoia

Sponsored by the Louisiana Water Environment Association

**Maine**

**Mei Tian**

Use of Cellulose-Based Materials

Infused with Layered Double Hydroxides

to Remediate Phosphorus from Stormwater

Bangor High School

Science Teacher - Cary James

Sponsored by the New England Water Environment Association

**Maryland**  
**Claire Wayner**

Effects of Inhibitory Bacterial Biofilms on Escherichia coli  
Contamination Levels in Engineered Infiltration Systems  
Baltimore Polytechnic Institute  
Science Teacher – Lisa Fridman  
Sponsored by the Chesapeake Water Environment Association

**Massachusetts**  
**Elise Mizerak**

What's In Your Water?  
Using Variable Water Temperature as a  
Method of Limiting Synthetic Fabric Microfibers  
Wachusett Regional High School  
Science Teacher – Nicholas Guerin  
Sponsored by the New England Water Environment Association

**Michigan**  
**Neha Narayan**

Activated Carbon Water Filtration - Using Household Articles  
and Study of its Effectiveness in Removing Pollutants  
Salem High School  
Science Teacher – Joan Pence  
Sponsored by the Michigan Water Environment Association

**Minnesota**  
**Avni Jain**

Wastewater Treatment: Utilizing Hydroponics to Develop  
a Novel and Sustainable Solution to Nutrient Pollution  
Eden Prairie High School  
Science Teacher – Kristin Gabel  
Sponsored by the Central States Water Environment Association

**Mississippi**  
**Helen Peng**

Optimal Photo-reactors for the Improvement of Solar Water  
Disinfection with the Advanced Oxidation Process  
Mississippi School of Math and Science  
Science Teacher – Dr. Tina Gibson  
Sponsored by the Mississippi Water Environment Association

**Missouri**  
**Lucas Mosher**

Exploring the Potential of a Modified Stun Gun as a Sterilization  
Technique for Drinking Water in Disaster Areas Through the Use of Pulsed  
Electric Field (PEF) Technology by the Degradation of Cellular Membranes  
Camdenton High School  
Science Teacher – Christopher Reeves  
Sponsored by the Missouri Water Environment Association

**Montana**

**Lucas Ritzdorf**

A Stochastic Computational Model for Dreissenid  
Mussel Invasion Risk in Montana's Waterways: Year 2  
Glacier High School

Science Teacher – Mark Drew

Sponsored by the Montana Water Environment Association

**Nebraska**

**Madeline Kane**

The Effect of Blue and Yellow Light on Crustose  
Coralline Algae (Lithothamnion spp.)  
Zoo Academy

Science Teacher – Amy Leising

Sponsored by the Nebraska Water Environment Association

**Nevada**

**Yatin Chandar**

Development of Highly Efficient Low-Cost Filter for  
Effective Dissolved Heavy Metal and Organic Contaminant Removal  
The Davidson Academy

Science Teacher – Martin Braik

Sponsored by the Nevada Water Environment Association

**New Hampshire**

**Meghana Avvaru**

An Economical Approach for Detecting Water Contamination  
At Homes - Preventing a Public Drinking Water Crisis  
Nashua High School South

Teacher – Stephen Minnigh

Sponsored by the New England Water Environment Association

**New Jersey**

**Harshal Agrawal**

Using Stropharia Mushroom Mycelium (*S. rugosoannulata*)  
and Waste Treatment Residual for Filtration of Nitrate/Total  
Dissolved Nitrogen and Phosphate from Agricultural Runoff  
to Prevent Harmful Algae Blooms - Year 4

Dr. Ronald E. McNair Academic High School

Science Teacher – Jeremy Stanton

Sponsored by the New Jersey Water Environment Association

**New Mexico**

**Rowan Kinney and Eben Bellas**

Optimizing Straw Mulch Use in Agriculture  
to Decrease Water Related Costs  
Taos High School

Science Teacher – Tracey Galligan

Sponsored by the Rocky Mountain Water Environment Association

**New York**

**Michelle Xing**

Direct Functionalization of Algal Nanocellulose  
to Enhance Biosorption for Lead(II) Remediation

Great Neck South High School

Science Teacher – James Truglio

Sponsored by the New York Water Environment Association

**North Carolina**

**Aakriti Lakshmanan**

A Study on the Coagulating Properties of the M. OLEIFERA Seed

Ardrey Kell High School

Science Teacher – Matthew Welch

Sponsored by the North Carolina Water Environment Association

**North Dakota**

**Lauren Knoll**

There is No Planet B: Aquaponics, Farming of the Future

Park Christian School

Science Teacher – Nancy Schnabel

Sponsored by the North Dakota Water Environment Association

**Ohio**

**No Qualifying Entries**

Sponsored by the Ohio Water Environment Association

**Oklahoma**

**Braden Milford**

“Designing a Novel Heavy Metal Bioremediation System Utilizing  
Immobilized Mixed Algae Partnered with Heavy Metal Resistant Microbial  
Isolates Collected from Contaminated Superfund Mine Sites and Identified  
with a 16S Ribosomal Subunit Analysis”

Cascia Hall Preparatory School

Science Teacher – Sally Fenska

Sponsored by the Oklahoma Water Environment Association

**Oregon**

**Cheney Sung**

Effects of Polyester and Cotton Microfibers on the  
Growth and Luminous Intensity of *Pyrocystis* sp.

Oregon Episcopal School

Science Teacher – Peter Langley

Sponsored by the Pacific Northwest Clean Water Association

**Pennsylvania**

**William Chen**

Evaluation of Two Methods for Remediating  
Antibiotic Water Pollutants Methacton

High School

Science Teacher – Robert Helm

Sponsored by the Pennsylvania Water Environment Association

**Puerto Rico**

**Bianca Rodriguez Castro**

Preventing the Drought from Turning into World Hunger:  
A novel natural superabsorbent polymer made of yucca and yam peels  
capable of maintaining the growth of a plant during drought.

CROEC

Science Teacher – Wilmayris Alvira

Sponsored by the Puerto Rico Water & Environment Association

**Rhode Island**

**Margaret O'Brien**

Waddle We Do Without Duckweed? Phytoremediation  
of Heavy Metals in Water Using Aquatic Macrophytes

Mt. Hope High School

Science Teacher – Christopher Munzert

Sponsored by the New England Water Environment Association

**South Carolina**

**Vignesh Rajmohan**

The Effectiveness of the Use of Moringa oleifera Seeds in the  
Removal of Metal Based Contaminants from Contaminated Water

J. L. Mann High School

Science Teacher – Anna Hanor

Sponsored by the Water Environment Association of South Carolina

**South Dakota**

**Margaret Fouberg and Branden Orr**

Utilizing Varying Molarities of Ammonium Nitrate to  
Analyze Daphnia magna Survival Rates in Polluted Water

Aberdeen Central High School

Science Teacher – Charles Hermansen

Sponsored by the South Dakota Water Environment Association

**Tennessee**

**Noah Walker and Makayla Wilson**

The Effect of Salt Brines with Various  
Concentrations on Chlorella Microalgae

Heritage High School

Science Teacher – Chelsie Sells

Sponsored by the Kentucky-Tennessee Water Environment Association

**Texas**

**Richard Zhang and Steven Wu**

Application of Novel Engineered Materials for Phosphorus  
Removal in Controlling Algae Bloom in Eutrophic Water

Clear Lake High School

Science Teacher – Lauren Cooper

Sponsored by the Water Environment Association of Texas

**Utah**

**Jessica Pratt**

Lead Isotope Correlation to Point Source  
Contamination in American Fork Reservoir

Maple Mountain High School

Science Teacher – Brittany Rogers  
Sponsored by the Water Environment Association of Utah

**Vermont**

**Sunthoshini Premsankar**

Neutralization of Pharmaceutical Pollution in Lake Champlain  
Champlain Valley Union High School  
Science Teacher – Sarah Strack  
Sponsored by the New England Water Environment Association

**Virgin Islands**

**No Qualifying Entries**

Sponsored by the Seven Seas Water Corporation

**Virginia**

**Kartik Chugh and Palash Shah**

Impurivision: A High Performance Mobile Application  
for Identifying Water Contamination using Deep Learning  
Westfield High School  
Science Teacher – Mary Constantino  
Sponsored by the Virginia Water Environment Association

**Washington**

**Sagarika Samavedi**

Analyzing the Effects of Anthropogenic Pollution on the  
Net Primary Productivity of Oceanic Phytoplankton using  
Satellite Data and In Vitro Experimentation  
Interlake High School  
Science Teacher – Philip Allen  
Sponsored by the Pacific Northwest Clean Water Association

**West Virginia**

**No Qualifying Entries**

Sponsored by the West Virginia Water Environment Association

**Wisconsin**

**Abigail Warwick and Hunter Bindas**

Development of a Grass Variety as a way to  
Remove Nitrogen from Water Environments  
Muskego High School  
Science Teacher – Karen Lindholm-Rynkiewicz  
Sponsored by the Central States Water Environment Association

**Wyoming**

**Kendrew Ellis**

Snow Pollution Effects on Water Quality  
in Medicine Bow National Forest, Wyoming  
East High School  
Science Teacher – Kelli Pederson  
Sponsored by the Rocky Mountain Water Environment Association