Science/Research Questions, Research Projects, and Charge

Presentation to the SAB COVID-19 Review Panel

April 30, 2020

Building the Science/Research Questions Table

- EPA has robust capabilities to respond to environmental emergencies and addressing biological contamination. The world continues to learn much about COVID-19 - we also have the expertise to add to that knowledge, especially in the areas of exposure and cleaning and disinfection.
- EPA Administrator asked for a summary, relevant to the Agency's role in response to the pandemic, on:
  - Current State of Knowledge and Capabilities
  - Research Questions that Can Enhance Knowledge and Capabilities
- Input was gathered from subject matter experts from across the Agency.

What's in the Table?

Page 1 of the table to illustrate how the table is organized

U.S. EPA – COVID-19 Science/Research Question List (April 20, 2020)

(Note: Yellow highlighting indicates where research efforts are already initiated within ORD)

Research Category	Current State of Knowledge and Capabilities	Research Questions that Can Enhance Knowledge and Capabilities
Environmental Disinfection	• EPA List N - Disinfectants for Use Against SARS-CoV-2 – lists many disinfectants as effective for use against SARS-CoV-2 on pre-cleaned, hard, non-porous environmental surfaces. ▪ Narrower list of products for porous materials. ▪ Narrower list of products for use as fogs, mists, vapors, or gases for volumetric disinfection. • The stringency of the registration process provides a high degree of confidence in the effectiveness of these products when used according to the product label (https://www.epa.gov/pesticide-registration/efficacy-requirements-antimicrobial-pesticides) • EPA uses standard laboratory methods (e.g., ASTM E1053-20 and ASTM E2197-17) to quantitatively evaluate the performance of disinfectants against viruses, and which are currently considered suitable for evaluating SARS-CoV-2 claims. • Registered disinfectants do not require confirmatory sampling (post-application to ensure disinfection is achieved). (https://www.cdc.gov/infectioncontrol/pdf/guidelines/disinfection-guidelines-H.pdf) • Enveloped viruses (such as SARS-CoV-2, the virus that causes COVID-19)) are generally more susceptible to disinfection than non-enveloped viruses, vegetative bacteria, and bacterial spores.[1,2,3] • According to technical support requests that EPA has been involved with, the availability of disinfectants may be limited in supply in some areas. Alternative disinfection methods and products are being sought in these instances.	Short-Term • Can basic cleaning techniques (e.g., using soap/water) alone be effective for surfaces to reduce environmental exposure to SARS-CoV-2? • How effective are devices such as UV, ozone generators or steam devices at reducing or eliminating exposure to SARS-CoV-2 from surfaces or objects? • What available disinfection methods can be effective for complex and difficult to disinfect areas/surfaces (such as porous materials, soft surfaces, and HVACs)? What are alternative disinfection methods, if such methods are not readily available or efficacious for an area? • What are readily available alternative disinfectants (not currently on EPA List N) for large-scale or special situation use and by what methods can these disinfectants be applied effectively? • Do methods of application of List N products via fogging and/or electrostatic spraying provide the necessary contact time on surfaces to be efficacious against SARS-CoV-2? • How effective are products that claim to offer residual/long-term (e.g., hours to months) ability to reduce potential exposure risk to SARS-CoV-2? • What disinfection methods (including using List N products) are suitable for residential and business-owner conducted disinfection? • How susceptible to disinfectants are each of the human coronavirus isolates used for antimicrobial product registration, SARS-CoV and SARS-CoV-2? This comparative research may lead to the use of a safer-to-handle surrogate virus for future regulatory and research purposes, thus facilitating additional product and technology development.

ORD Research Underway

This month, ORD initiated applied research to enhance the nation's ability to respond to the current response in the weeks and months ahead.

Research Topics and Projects:

Cleanup and Disinfection Evaluation

- Surface Sampling Efficiency
- Real-World Surface Disinfection
- Long-Lasting Disinfectants
- Alternative Disinfection Devices
- Rapid Viability Polymerase Chain Reaction (RV-PCR) CoV-2 Assay
- Personal Protective Equipment (PPE) Disinfection

Wastewater Virus Monitoring and Detection

- Sewage Virus Levels for Assessing Community Infection Rate
- Live Virus Levels in Sewage and Effectiveness of Wastewater Treatment

Salivary Antibody Assay Development

Charge Questions

1. Within each research category, please discuss whether there is sufficient clarity to indicate how addressing a research question might inform Agency activities related to the SARS-CoV-2 pandemic? Specifically,
   a) Which research questions within a category are particularly suited to EPA's mission and will have the most impact on EPA's role in responding to the SARS-CoV-2 pandemic?
   b) Are there research questions that could more effectively be addressed by another Federal partner, the private sector, academia or some combination?
2. Within each research category, please identify if there are other research questions that have not been identified by the Agency, that have the potential to refine or improve our understanding and further support its role with respect to the pandemic.
3. Within a research category, EPA roughly identified what research could be accomplished in the short-term, and what would be longer-term efforts. Within each research category, are there other considerations that might impact prioritization? How might research be prioritized across the landscape of research categories that have been identified?
4. Are there any other important categories of research, focused on the Agency's role in responding to the SARS-CoV-2 pandemic, that are not captured in the existing table? If so, please discuss the current state of knowledge in the research category and identify what research would be relevant and inform EPA's efforts. Please provide some sense of prioritization and whether the effort is a short-or-long term research effort.

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