

# Human Health Exposure Analysis Resource (HHEAR) Initial Application for HHEAR Services

## *Step 1 of 9: Background/Introduction*

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The HHEAR Application is for investigators who wish to apply for HHEAR laboratory and data analysis services to add or broaden analyses of environmental exposures in their studies of human health.

Before submitting an Initial Application, please review the [policies](#) and [procedures](#) for accessing HHEAR services.

Contact [HHEARhelp@westat.com](mailto:HHEARhelp@westat.com) with any questions about this Application.

### **Instructions**

- Step 1: Review background/introduction.
- Step 2: Provide information about yourself, a project contact person, and any co-investigators.
  - If you do not have the authority to commit to the transfer of biological and/or environmental specimens and data, list contact information for those who do.
  - Upload biographical sketches for yourself and co-investigators. Use the standard NIH biographical sketch format PHS 398.
- Step 3: Complete the section on investigator eligibility. If you have questions about your eligibility, contact [HHEARhelp@westat.com](mailto:HHEARhelp@westat.com).
- Step 4: Review HHEAR policies and indicate your agreement.
- Step 5: Specify which HHEAR services you are requesting.
- Step 6: Provide information on your parent study.
  - Provide succinct responses to each item. Note word/character limits.
- Step 7: Provide information about your proposed HHEAR project.
  - Provide succinct responses to each item. Note word/character limits.
  - Upload a list of citations of key references that provide scientific premise for the proposed project including the rationale for requested services.
- Step 8: Preview application.
- Step 9: Complete application.

# Human Health Exposure Analysis Resource (HHEAR) Initial Application for HHEAR Services

Step 2 of 9: Application/Investigator Information

## Step 2 of 9: Applicant/Investigator Information

**Project number** (will be filled in automatically upon submission of this form): \_\_\_\_\_

**Principal Investigator:** *Please provide contact information and biosketch for the Principal Investigator (PI). Indicate whether the PI has the authority to commit for the transfer of samples and/or data.*

**Principal Investigator:**

**Name:** \_\_\_\_\_

**Institution:** \_\_\_\_\_

**Phone:** \_\_\_\_\_

**Email:** \_\_\_\_\_

**Biosketch:** [\[UPLOAD HERE\]](#)

**Authority to commit to transfer**

Biological Samples:  Yes  No  N/A

Environmental Samples:  Yes  No  N/A

Data:  Yes  No

**Other Investigator:** *Complete this item for the investigator with the authority to commit to transfer of biological/environmental samples and/or data, if it is not the PI. If you propose to use samples and/or data from more than one cohort, click the "Add Other Investigator(s)" button below to provide this information for all biological/environmental samples and data sources.*

**Other Investigator:**

**Name:** \_\_\_\_\_

**Institution:** \_\_\_\_\_

**Phone:** \_\_\_\_\_

**Email:** \_\_\_\_\_

**Role:**  Co-Investigator

Other (specify): \_\_\_\_\_

# Human Health Exposure Analysis Resource (HHEAR) Initial Application for HHEAR Services

*Step 2 of 9: Application/Investigator Information*

**Biosketch:** *[UPLOAD HERE]*

**Authority to commit to transfer**

Biological Samples:       Yes  No  N/A

Environmental Samples:     Yes  No  N/A

Data:                             Yes  No

*[ADD OTHER INVESTIGATOR(S)]*

**Project Contact Person (if different from Principal Investigator):**

**Name:** \_\_\_\_\_

**Institution:** \_\_\_\_\_

**Phone:** \_\_\_\_\_

**Email:** \_\_\_\_\_

# Human Health Exposure Analysis Resource (HHEAR) Initial Application for HHEAR Services

## Step 3 of 9: Investigator Eligibility

### Step 3 of 9: Investigator Eligibility

*Please provide responses to each item below to indicate your eligibility for HHEAR services.*

You have an ongoing or completed epidemiological or clinical study (parent study) with human biological and/or environmental samples linked to health outcome data.

Yes       No

You want to add environmental exposure data to your parent study or need more extensive analysis of exposures to support your scientific hypothesis related to health outcomes.

Yes       No

Although your parent study may be ongoing, you have collected all the data and biological and environmental samples that you will provide to HHEAR for the proposed project prior to submitting your final application.

Yes       No

You meet at least one of the following funding criteria (mark all that apply).

- Your ongoing or completed parent study is/was funded at least in part by NIEHS extramural funds. In addition, NIEHS will consider support for studies with significant NIEHS engagement that are administered by other NIH Institutes such as the Environmental Health Disparities Centers (administered by NIMHD), the GEOHealth Centers (administered by FIC), and the ABCD study (administered by NIDA) as well as others. Applicants are encouraged to inquire about potential eligibility before submitting an application. Eligible studies supported by NIEHS may request all HHEAR services including targeted and untargeted analysis of biological and environmental samples.

Yes  No

- Your parent study is/was funded by the NIEHS Superfund Research Program. Studies funded by the NIEHS Superfund Research Program are eligible for targeted and untargeted analysis of biological and environmental samples.

Yes  No

- Your parent study is currently funded at least in part by NHLBI extramural funds. Studies funded by NHLBI extramural funds are eligible for targeted and untargeted analysis of only biological samples.

Yes  No

## Human Health Exposure Analysis Resource (HHEAR) Initial Application for HHEAR Services

### Step 3 of 9: Investigator Eligibility

- Your parent study is currently funded by NCI extramural funds and has more than one year of funding remaining at the time you submit the HHEAR Initial Application. Studies funded by NCI extramural funds are eligible for only targeted analysis of biological samples.  
 Yes  No
  
- Your study is an ECHO-wide cohort analysis proposal that has been approved through the ECHO Publications Program, or an ECHO Opportunities and Infrastructure Fund (OIF) proposal approved through the ECHO OIF Program. Studies funded by ECHO are eligible for targeted and untargeted analysis of only biological samples.  
 Yes  No
  - ECHO-wide and OIF supported projects are managed through the ECHO program and don't require an additional application for HHEAR services. ECHO cohorts may be eligible for cohort specific analyses through NIEHS, NHLBI, or NCI support through a HHEAR application.
  - Email [echocc-publications@dm.duke.edu](mailto:echocc-publications@dm.duke.edu) for more information on the ECHO Publications Program. Email [echocc-oif@duke.edu](mailto:echocc-oif@duke.edu) for more information on the ECHO OIF Program.

You are eligible to apply for an NIH grant at your home institution, and you have the authority to commit to documentation such as the Material Transfer Agreement, Data Submission Agreement, and Data Sharing Plan

Yes  No

You agree to share your experimental design details and supporting data, including phenotypic data at the individual level, needed to achieve the aim(s) of your proposal?

Yes  No

# Human Health Exposure Analysis Resource (HHEAR) Initial Application for HHEAR Services

## Step 4 of 9: Agreement to HHEAR Policies

### Step 4 of 9: Agreement to HHEAR Policies

Please indicate that you have read and will comply with the [Policies for Access to HHEAR Services](#) by adding your eSignature in the space provided.

I have read and will comply with the HHEAR policies for accessing services.

Yes

No

eSignature \_\_\_\_\_

If no, please provide an explanation:

*(100 words remaining)*

Are you subject to any other data sharing policies (e.g., a consortium agreement that your data must adhere to)?

Yes

No

If yes, please provide an explanation:

*(100 words remaining)*

# Human Health Exposure Analysis Resource (HHEAR) Initial Application for HHEAR Services

*Step 5 of 9: Request HHEAR Services*

## **Step 5 of 9: Request HHEAR Services**

*Please indicate the HHEAR services you are requesting (select all that apply):*

- Laboratory analysis of biological samples
- Laboratory analysis of environmental samples
- Statistical analysis

# Human Health Exposure Analysis Resource (HHEAR) Initial Application for HHEAR Services

## Step 6 of 9: Parent Study Information

### Step 6 of 9: Parent Study Information

Please complete each item below to provide the key information that can be used by reviewers to understand the **parent study** for the proposed project. If there is more than one parent study providing data and biological and/or environmental samples, provide the information for each parent study. Do not leave any items blank.

1. Parent study project title: \_\_\_\_\_

2. Parent study cohort name and website link (if available):

\_\_\_\_\_  
\_\_\_\_\_

3. Parent study funding source(s), including grant number(s): \_\_\_\_\_

4. Parent study Principal Investigator and institution: \_\_\_\_\_

5. Parent study key publications (*limit to 3; provide as PMIDs*):

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

6. Primary hypothesis of the parent study:

*(20 words remaining)*

7. Summary of main published findings for parent study:

*(100 words remaining)*

# Human Health Exposure Analysis Resource (HHEAR) Initial Application for HHEAR Services

## Step 6 of 9: Parent Study Information

### 8. Parent study design:

*(Check all that apply)*

- |   |   |  |
|---|---|--|
| <input type="checkbox"/> Cross-sectional  | <input type="checkbox"/> Hospital-based       | <input type="checkbox"/> Ambispective cohort |
| <input type="checkbox"/> Case-control     | <input type="checkbox"/> Prospective cohort   | <input type="checkbox"/> Intervention study  |
| <input type="checkbox"/> Population-based | <input type="checkbox"/> Retrospective cohort | <input type="checkbox"/> Clinical trial      |
| <input type="checkbox"/> Other: _____     |   |  |

### 9. Parent study population description:

*(80 words remaining)*

- a. Sample size for parent study\* (e.g., # cases and controls if case-control study, number of cohort members if cohort study): \_\_\_\_\_

*\*If study is longitudinal, please indicate the sample size at the first time point as well as the last time point.*

- b. Age range(s) of parent study population (at study entry): \_\_\_\_\_

- c. Has the parent study population been included in a previous CHEAR/HHEAR project or in a previous ECHO project?

- Yes, specify                       No

Specify: \_\_\_\_\_

- d. Geographic location(s) of the parent study population: \_\_\_\_\_

- e. Years in which the parent study was conducted: \_\_\_\_\_

- f. Method of data collection (e.g., survey, in-person visits, medical records) for the parent study: \_\_\_\_\_

- g. Number of data collection time points and interval between data collection time points for the parent study: \_\_\_\_\_

10. Main exposures (environmental and/or non-environmental) investigated for the parent study: \_\_\_\_\_

# Human Health Exposure Analysis Resource (HHEAR) Initial Application for HHEAR Services

## *Step 6 of 9: Parent Study Information*

11. Type of biological and/or environmental samples collected (i.e., whole blood, plasma, urine) for the parent study: \_\_\_\_\_
  - a. Years in which biological samples were collected for the parent study:  
\_\_\_\_\_
  - b. Number of samples collected per study participant/interval between sample collection for the parent study: \_\_\_\_\_
  - c. Years in which environmental samples were collected for the parent study:  
\_\_\_\_\_

# Human Health Exposure Analysis Resource (HHEAR) Initial Application for HHEAR Services

## Step 7 of 9: Proposed HHEAR Project

### Step 7 of 9: Proposed HHEAR Project

Please complete each item below to provide the key information that can be used by reviewers to evaluate your proposed project.

**Proposed Project Title:** \_\_\_\_\_

1. Abstract: Please provide a summary (hypotheses, study design, methods and statistical analysis) of your **proposed HHEAR project** in the context of the parent study.

*(150 words remaining)*

2. Specific aim(s) for proposed HHEAR project:

a. Specific aim 1: \_\_\_\_\_

b. Specific aim 2 (if applicable): \_\_\_\_\_

c. Specific aim 3 (if applicable): \_\_\_\_\_

3. Exposures to be investigated for proposed project: \_\_\_\_\_

4. Significance:

- a. Describe the scientific premise for the proposed HHEAR project including the rationale for requested services (targeted, untargeted, and/or environmental analysis). Please provide citations when applicable and indicate which are “key” references for the rationale:

*(250 words remaining)*

**List of citations:** [\[UPLOAD HERE\]](#)

# Human Health Exposure Analysis Resource (HHEAR) Initial Application for HHEAR Services

## Step 7 of 9: Proposed HHEAR Project

- b. Explain how the proposed project will improve scientific knowledge of the comprehensive effects of environmental exposures on human health noting advancements over previous research on this topic or how the proposed project will address gaps in scientific knowledge. Include any information related to life stage (e.g., infants, adolescents, adults, seniors) that the project may focus on:

*(200 words remaining)*

- c. Describe how the requested HHEAR analyses will enhance the findings from the parent study:

*(100 words remaining)*

### 5. Study design of proposed HHEAR project:

*(250 words remaining)*

- a. Study sample size: \_\_\_\_\_
- b. Relationship between participants (if applicable) (e.g. i.e. mother-child, siblings, family based trios):

*(50 words remaining)*

- c. Provide, in a narrative, a breakdown of the total number of participants with biological and/or environmental samples available for analysis by visit and/or age:

*(100 words remaining)*

## Human Health Exposure Analysis Resource (HHEAR) Initial Application for HHEAR Services

### *Step 7 of 9: Proposed HHEAR Project*

6. Define your proposed HHEAR project according to the following criteria (please check all that apply):

**Hypothesis testing** (for example a new hypothesis or replication of published studies)

**Hypothesis generation**

a. Provide an explanation to demonstrate how your HHEAR project meets the criteria for hypothesis testing, hypothesis generation, or both:

*(100 words remaining)*

## Human Health Exposure Analysis Resource (HHEAR) Initial Application for HHEAR Services

### Step 7 of 9: Proposed HHEAR Project

7. **Proposed Project Biological Sample Characteristics and Analyses:** Complete Table 1 to provide information on characteristics of participants, the associated biological samples that will be provided, and the requested laboratory analyses. Complete a separate row for each unique combination of characteristics. Provide the biological sample information in as much detail as possible. For example, if you are providing serial serum and urine samples collected from men and women at Time 1 and Time 2, you would complete 8 rows of the Table. If you have a sample matrix that does not match a specified option, select "O-Other" and specify the matrix in the Other Comments section. If you need to add rows to the table, contact [HHEARHelp@westat.com](mailto:HHEARHelp@westat.com).

**Table 1: Proposed Project Biological Sample Characteristics and Analyses**

Priority Order for Analyses	Laboratory Analyses (exposure measures) (select from drop down*)	Participant Type (select from drop down*)	Age/Stage at Collection (e.g., ages 0-2, first trimester)	Time in Study (T1, T2, T3)	Sample Matrix (select from drop down*)	# Participants	# Samples per Participant	# Total Samples	Available Volume per Sample (with units)	Collection Method (e.g., morning void, fasting, passive drool)	Storage Temp (with units)	# of Freeze-Thaws	Sample Collection Status (All or Some)	Other Comments
	SELECT ONE:	SELECT ONE:			SELECT ONE:									
	SELECT ONE:	SELECT ONE:			SELECT ONE:									
	SELECT ONE:	SELECT ONE:			SELECT ONE:									
	SELECT ONE:	SELECT ONE:			SELECT ONE:									
	SELECT ONE:	SELECT ONE:			SELECT ONE:									
	SELECT ONE:	SELECT ONE:			SELECT ONE:									

**Scroll to the right to ensure you complete all columns.**

\*See drop down options for this table under Additional Information

## Human Health Exposure Analysis Resource (HHEAR) Initial Application for HHEAR Services

### Step 7 of 9: Proposed HHEAR Project

8. Provide information for each type of biospecimen to be analyzed for your proposed project. Describe the type of specimen collected (*e.g., venous, whole blood, plasma, serum, urine, saliva, etc.*), the collection method (*e.g., spot urine, passive drool saliva, etc.*) and any processing (*e.g. centrifugation, and/or aliquoting into secondary containers, etc.*). Include a description of any additives (*e.g. type of anticoagulant, clot stimulator, separator gel, type of preservative, etc.*) that were included with or added to the primary or secondary container during collection and/or processing. Describe the storage containers, storage temperature, length of time in storage, and number of freeze thaws. Please note that if your proposed HHEAR project progresses to the Feasibility Assessment consultation, you will be required to provide information on sample collection, processing, and storage.

*(250 words remaining)*

## Human Health Exposure Analysis Resource (HHEAR) Initial Application for HHEAR Services

### Step 7 of 9: Proposed HHEAR Project

9. **Environmental Samples and Analyses:** Complete Table 2 to provide information on the environmental samples that will be provided to HHEAR and requested lab analyses. Complete a separate row for each unique combination of characteristics. Provide the environmental sample information in as much detail as possible. If you have a sample matrix that does not match a specified option, select "O-Other" and specify the matrix in the Other Comments section. If you need to add rows to the table, contact [HHEARHelp@westat.com](mailto:HHEARHelp@westat.com).

**Table 2: Proposed Project Environmental Sample Characteristics and Analyses**

Priority Order for Analyses	Laboratory Analyses <i>(select from drop down*)</i>	Time in Study <i>(T1, T2, T3)</i>	Sample Matrix <i>(select from drop down*)</i>	# Samples	Available Total Volume/Quantity <i>(with units)</i>	Storage Temp <i>(with units)</i>	# of Freeze-Thaws	Other Comments
	SELECT ONE:		SELECT ONE:					
	SELECT ONE:		SELECT ONE:					
	SELECT ONE:		SELECT ONE:					
	SELECT ONE:		SELECT ONE:					

\*See drop down options for this table under Additional Information

# Human Health Exposure Analysis Resource (HHEAR) Initial Application for HHEAR Services

## Step 7 of 9: Proposed HHEAR Project

10. Provide information on the collection method employed, including the tools and materials used to collect the environmental sample, and any sample processing that was conducted (e.g., sieving) and the containers used to store the samples. Please also include the location where the samples were collected (e.g., if dust, where in the house was the dust collected?):

*(100 words remaining)*

11. In the items below, provide information about the variables that will be submitted to HHEAR for data analysis:

a. Outcome(s): (Check all that apply)

- |   |  |   |
|---|--|---|
| <input type="checkbox"/> Asthma             | <input type="checkbox"/> Autism                      | <input type="checkbox"/> Biomarker validation             |
| <input type="checkbox"/> Cancer             | <input type="checkbox"/> Cardiovascular disease/risk | <input type="checkbox"/> Diabetes                         |
| <input type="checkbox"/> Infectious disease | <input type="checkbox"/> Liver disease               | <input type="checkbox"/> Neurologic/cognitive development |
| <input type="checkbox"/> Obesity/growth     | <input type="checkbox"/> Pregnancy outcomes          | <input type="checkbox"/> Respiratory health               |
| <input type="checkbox"/> Other: _____       |  |   |

- b. How was/were the outcome(s) assessed? For each outcome, please indicate the clinical definitions, symptoms checklists or standardized questionnaires used to obtain outcome measures. For example: asthma diagnosis is based on spirometry lung function- FEV1/FVC; recurrent wheezing/asthma is determined by validated ISAAC questionnaire; incident cancer cases (C22.0, ICD-XX histology codes XX-XX) are identified via SEER tumor registry linkage; Type 2 Diabetes is defined as fasting serum glucose  $\geq 126$ mg/dl and/or currently taking anti-diabetic medication.

*(100 words remaining)*

# Human Health Exposure Analysis Resource (HHEAR) Initial Application for HHEAR Services

## Step 7 of 9: Proposed HHEAR Project

- c. List key covariates. Along with the covariate, please provide the name of the standardized/validated questionnaires (symptom checklists, scales, etc.), if any, used to ascertain the variable.

*(100 words remaining)*

- d. Provide frequency tables of key covariates and outcomes for the Proposed HHEAR study, including missing (by time point if applicable) as an attachment. This should be similar to a usual table 1 of a study population (example Populations Characteristics Table). If not currently possible, provide a description of expected missingness on all key covariates and outcomes. If you don't currently have access to this information, please explain why. **[UPLOAD HERE]**

### 12. Statistical analysis plan

- a. Provide a summary description of the analysis strategy and statistical approaches proposed to address each aim. In your explanation, address the following points, as applicable (e.g., confounding, non-linearity, mixtures, combined effect of multiple exposures, potential interactions), and indicate how the proposed strategy will be evaluated to ensure validity, generalizability, and interpretability:

*(500 words remaining)*

- b. Provide power calculations (e.g., measureable effect size, sample size calculations) for each aim or explain the rationale for why the anticipated sample size is sufficient:

*(100 words remaining)*

**Human Health Exposure Analysis Resource (HHEAR)  
Initial Application for HHEAR Services**

*Step 7 of 9: Proposed HHEAR Project*

13. Challenges and biases that might be encountered in conducting the proposed study analysis:

*(50 words remaining)*

# Human Health Exposure Analysis Resource (HHEAR) Initial Application for HHEAR Services

## Additional Information

### Additional Information

The following shows the drop-down options for each of the tables in the application.

**Table 1 Drop-Down Options: Proposed Project Biological Sample Characteristics and Analyses**

<b>Laboratory Analyses (exposure measures)</b>	BFR - Brominated Flame Retardants DNA Adducts DRUG - Pharmaceuticals and Drugs of Abuse <del>INFLAM - Cytokines and Other Inflammatory Markers</del> NUTRIENTS OPE - Organophosphate Ester Flame Retardants & Plasticizers <del>OXID - Oxidative Stress</del> PAH - Polycyclic Aromatic Hydrocarbons PESTICIDES - Current Use PESTICIDES - Legacy PFAS - Perfluoroalkyl and polyfluoroalkyl substances PHENOLS PHTHALATES SMOKE - Tobacco Metabolites STRESS - Cortisol TARGET - Other Targeted Analysis TRACE ELEMENTS UNTARGETED VOC - Volatile Organic Compounds
<b>Sample Matrix**</b>	B - Whole Blood BLF - Bronchial Lavage Fluid BR - Breast Milk BT - Biopsied Tissue BU - Buccal Cell CB - Cord Blood CSF - Cerebrospinal Fluid CT - Cord Tissue D - DNA DBS - Dried Blood Spots EBC - Exhaled Breath Condensate H - Hair ME - Meconium

## Human Health Exposure Analysis Resource (HHEAR) Initial Application for HHEAR Services

### *Additional Information*

<b>Sample Matrix** (continued)</b>	<p>N - Nails  O - Other  OT - Other Tissue  PA - Plasma (Acid Citrate Dextrose - Yellow Top)  PC - Plasma (Sodium Citrate - Lt. Blue Top)  PE - Plasma (EDTA - Lavender Top)  PH - Plasma (Sodium or Lithium Heparin - Green Top)  PTM - Plasma (Trace Metal Free, EDTA - Royal Blue Top)  PST - Plasma (Separator Tube with EDTA or Lithium Heparin and Gel Barrier)  PL - Placenta  R - RNA  RBC - Red Blood Cells  S - Serum (No Anticoagulant or Preservative - Red Top Tube)  SST - Serum (Clot Activator and Gel - Red/Gray Top or Gold Top)  STM - Serum (Trace Metal Free, Clot Activator - Royal Blue Top)  SL - Saliva  ST - Stool  T - Teeth  U - Urine  WBC - White Blood Cells</p>
<b>Participant Type</b>	<p>Adults (18+ years)  Adolescents (12-17 years)  Children (1-11 years)  Infants (0-12 months)  Pregnant Mothers</p>

\*\*All blood collection tubes are United States standard blood tube types.

## Human Health Exposure Analysis Resource (HHEAR) Initial Application for HHEAR Services

### *Additional Information*

**Table 2 Drop-Down Options: Proposed Project Environmental Sample Characteristics and Analyses**

<b>Laboratory Analyses (exposure measures)</b>	<p>BFR - Brominated Flame Retardants          OPE - Organophosphate Ester Flame Retardants &amp; Plasticizers          PAH - Polycyclic Aromatic Hydrocarbons          PESTICIDES - Current Use          PESTICIDES - Legacy          PFAS - Perfluoroalkyl and polyfluoroalkyl substances          PHENOLS          PHTHALATES          TARGET - Other Targeted Analysis          TRACE ELEMENTS          UNTARGETED</p>
<b>Sample Matrix</b>	<p>AG - Air Sample Glass Fiber Filter          AP - Air Sample Polyurethane Media          AS - Air Samplers (Other media - need specific info)          AT - Air Sample Teflon Filter          AX - Air Sample XAD Resin          CD - Car Dust          DWF - Drinking Water Filtered          DWU - Drinking Water Unfiltered          GWF - Groundwater Filtered          GWU - Groundwater Unfiltered          HD - House Dust          HW - Hand Wipes          O - Other          SED - Sediment          SOI - Soil          WP - Surface Wipe          SW - Silicone Wristbands          SWF - Surface Water Freshwater Filtered          SWU - Surface Water Freshwater Unfiltered</p>