# Quick Start Guide for SHEDS-HT

This tutorial will guide you through 1) Installing the SHEDS-HT R Package and corresponding data and 2) running an example run included in the R package (a run of chemicals identified via MSDS sheets as present in various categories of consumer products). This tutorial assumes that you have already installed both R and RStudio. Most of these steps will only need to be done once. Also included with the SHEDS-HT distribution package is a script titled that, with editing for paths, will perform the steps in this tutorial.

**Note: If when running "setup()" (in Step 2 below) you receive an error cannot open file 'R/Sheds_HT.R': No such file or directory" you have a old version of SHEDS-HT functions loaded in your workspace. From the RStudio menu select" Session->Clear Workspace" and try again**

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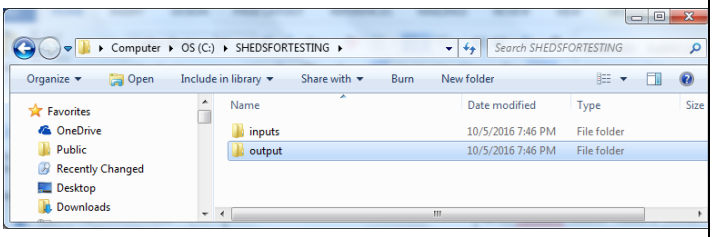
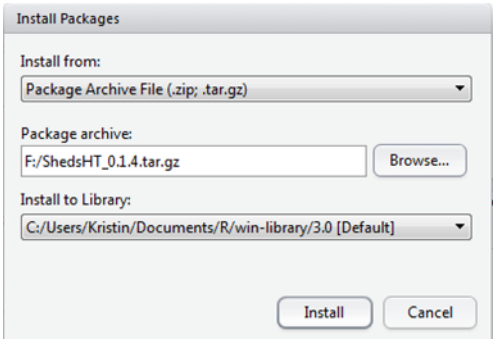
| 1. Create a SHEDS home location for storing your input and output files; create "**inputs**" and "**output**" subfolders. You can create as many SHEDS-HT home folders as you want, accessing them at different times. Here, for example, we create a folder called "C:/SHEDSFORTESTING" |  |
| 2. Install SHEDS-HT package into your R environment. You will only need to do this once for each computer, or when you are installing an updated version of the R package. | Type the following command into the RStudio command line, giving the path to the SHEDS-HT package file.<br><br>`>install.packages("F:/ShedsHT_0.1.4.tar.gz", repos = NULL, type = "source")`<br><br>OR<br><br>in RStudio, select "Tools"; "Install Packages"; and "Install from: Package Archive File" and browse to the file location.<br><br>  |
| 3. Load other R packages required by SHEDS-HT (**data.table**, **stringr**, **plyr**, and **ggplot**). You will only need to do this once for each computer. | Type the following commands into the RStudio command line<br><br>`>install.packages("data.table")`<br>`>install.packages("stringr")` |

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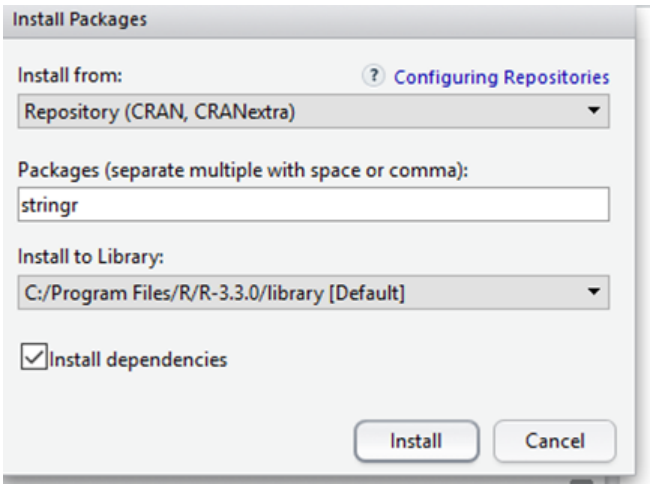
| | `>install.packages("plyr")`<br>`>install.packages("ggplot2")`<br><br>OR<br><br>in RStudio, select "Tools"; "Install Packages"; and "Install from: Repository" and type in a package name. Repeat for all 4 packages.<br><br>  |
| 1. Load the ShedsHT Package functions into the current session. (This must be done every time you start a new R session.) | Type the following command into the RStudio command line:<br><br>`> library(ShedsHT)` |
| 2. Run the "**setup**" function on the SHEDS home location folder that you created in step 1, so SHEDS knows where to store materials. (This must be done every time you start a new R session.) | Type the following command into the RStudio command line:<br><br>`> setup("C:/SHEDSFORTESTING")`<br><br>The version information and EPA Disclaimer will display.<br><br>`ShedsHT Version 0.1.5 (03/10/2017)`<br>`Disclaimer`<br>`The United States Environmental Protection Agency thr ough its Office of Research and Development funded an d collaborated in the research and development of thi s software, in part under Contract EP-C-14-001 to ICF International. The model is publicly available in Bet a version form. All input data used for a given appli cation should be reviewed by the researcher so that t he model results are based on appropriate data source s for the given application. This model, default inpu t files, and R package are under continued developmen t and testing. The model equations and approach are p ublished in the peer-reviewed literature (Isaacs et a l. Environ. Sci. Technol. 2014, 48, 12750-12759). The data included herein do not represent and should not be construed to represent any Agency determination or policy.` |

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| 3. If this is the first time you are using SHEDS, or if you have created a new home location, copy the SHEDS default inputs into the file. They are available at the SHEDS Github repository here:<br><br>**https://github.com/HumanExposure/SHEDSHTRPackage** | Copy files into the "inputs" folder of your SHEDS home location |
| 4. Call the SHEDS run function with a SHEDS **Run file** as argument. SHEDS comes with several example run files described in the Technical Manual. They are located in the **input** directory of your SHEDS home location. Here, we run the "**artsandcrafts**" example. | >run("run_artsandcrafts.txt")<br><br>This will produce the output:<br><br>run.name = run_artsandcrafts<br>n.persons = 100<br>person.output = 1<br>source.output = 1<br>min.age = 0<br>max.age = 99<br>genders = M F<br>season = P S F W<br>details = 1<br>age.match.pct = 20<br>run.seed = 876144637<br>set.size = 10000<br>act.diary.file = Activity_diaries.csv<br>chem.props.file = Chem_props.csv<br>diet.diary.file = Diet_diaries.csv<br>exp.factor.file = Exp_factors.csv<br>fugacity.file = Fugacity.csv<br>media.file = Media.csv<br>physiology.file = Physiology.csv<br>population.file = Population.csv<br>source.vars.file = Source_vars_products.csv<br>source.scen.file = Source_scen_products.csv<br>source.chem.file = source_chem_ac.csv<br># chemicals = 0<br><br>Reading Activity Diaries completed<br>Reading Chemical Properties completed<br>Reading Dietary Diaries completed<br>Reading Exposure Factors completed<br>Reading Media File completed<br>Reading Physiology File completed<br>Reading Population File completed<br>Reading Source.chemicals file completed<br>Reading Source.variables file completed<br>Activity Diary Pooling completed<br>Dietary Diary Pooling completed<br>General Factor Tables completed<br>Media-specific Factor Tables completed<br><br>Starting source 1 of chem 1 of 24<br>set= 1 / 1 chem= 1 / 24 100_41_4 ETHYLBENZENE |

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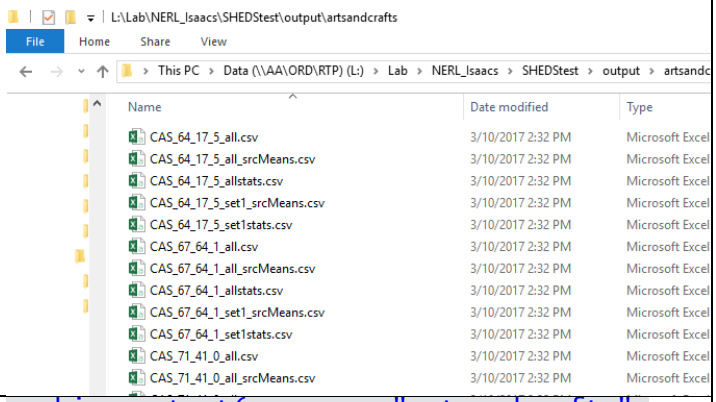
| 5. Examine the SHEDS Output files in the Output folder of the SHEDS home folder you designated with **setup**(). The files will be in a subfolder under “Output” with the run name you provided in the run file (Here “artsandcrafts”). |  |
| 6. Combine the Percentile Data for all chemicals (i.e. the “AllStats” files created in the output folder) into a single file for other analyses. The file is placed in the output folder for the run. | `combine_output(run.name="artsandcrafts", out.file="artsandcrafts.csv")`<br><br>`Processing chemical 1 of 24`<br>`Processing chemical 2 of 24`<br>`Processing chemical 3 of 24`<br>`Processing chemical 4 of 24`<br>`Processing chemical 5 of 24`<br>`Processing chemical 6 of 24`<br>`Processing chemical 7 of 24`<br>`Processing chemical 8 of 24`<br>`Processing chemical 9 of 24…` |