1999 HWIR ECONOMIC MODEL

DESCRIPTION OF ELECTRONIC DATAFILES CONTAINED WITHIN THE MODEL

This manual accompanies the industrial process hazardous waste data used as underlying database components (i.e. as input electronic files) for the HWIR Economic Model under development by the USEPA. The purpose of this model is to enable an economic assessment of the potential national economic impacts – primarily in the form of waste management cost savings to industrial generators and handlers of RCRA industrial hazardous wastes – of the "exemption level" framework described in the 1999 HWIR Federal Register notice.

These Model database components include descriptive information about a subset of US industrial hazardous wastes derived from two different USEPA surveys (i.e. the "hybrid" database derived from non-duplicative combination of the USEPA's "1986 Generator Survey" and the USEPA's "1996 National Hazardous Waste Constituent Survey")[1], which may be affected by the future HWIR exemption, as well as national average unit cost estimates for industrial waste treatment and disposal.

These data are provided in a series of **five electronic, computer datafiles** (totaling 12.5 MB in size), in two alternative electronic formats. First, the Microsoft Access database file:

- **HWIR_DATA.MDB (7.77 MB)**

contains these data in four separate tables (HWIR_SURVEY_STREAMS, HWIR_SURVEY_CONSTITUENTS, HWIR_TREATMENT_COSTS and HWIR_DISPOSAL_COSTS). These data are also provided in four comma-delimited files:

- **HWIR_SURVEY_STREAMS.CSV (1.66 MB)**
- **HWIR_SURVEY_CONSTITUENTS.CSV (3.07 MB)**
- **HWIR_TREATMENT_COSTS.CSV (1 KB)**
- **HWIR_DISPOSAL_COSTS.CSV (1 KB)**

These five files can be imported to other database programs.

[1] The "1986 Generator Survey" component of the "hybrid database" in the 1999 HWIR Economic Model, contains descriptive data about small- and medium-sized industrial process hazardous wastestreams, and the "1996 NHWCS" component of the "hybrid" database contains only data about large-sized wastestreams [note: size as measured by annual waste quantities generated, not on facility number of employees or annual sales revenue size]. USEPA constructed the "hybrid" database, by non-duplicative combination of wastestreams from each survey, so that the large-size wastestreams of the 1996 survey, replaced the large-size wastestreams contained in the 1986 survey.

The first data table, HWIR_SURVEY_STREAMS, contains data on the waste streams used in the HWIR Economic Model. The second table, HWIR_SURVEY_CONSTITUENTS, contains data on the constituents in the waste streams. There will be one or more constituents in this table for each waste stream in HWIR_SURVEY_STREAMS. STREAM_ID is the key field used to join the two tables.

The cost data consists of two tables. The first is HWIR_TREATMENT_COSTS, which contains costs for various treatment types by waste quantity. It also contains residual factors that are used in cost savings calculations. The second cost table is HWIR_DISPOSAL_COSTS, which contains Subtitle C and Subtitle D disposal costs by waste quantity.

The exhibits below describe the structure of the data tables, and include the field name, a brief description of the field, and the survey source of the data (i.e., Generator Survey, NHWCS, assigned, or derived). The survey data tables also include field formats (data type and length) for use with the comma-delimited files.

If you want to use the comma-delimited version of the survey data (HWIR_SURVEY_STREAMS and HWIR_SURVEY_CONSTITUENTS) in a spreadsheet package, please note the following:

Excel: Opening a CSV file will create a single sheet in your workbook.

Lotus: Opening a CSV file will create a sheet in your workbook for every 8192 records, with the field names on the first sheet only.

Quattro Pro: Opening a CSV file directly will cause truncation of the data. Therefore, if you have to use Quattro Pro, choose Tools, Data Tools, Quick Columns, and follow the prompts. This will create a sheet in the workbook for every 8192 records, with the field names on the first sheet only.

Table 1: HWIR_SURVEY_STREAMS

Field Name	Description	Source	Format Type
STREAM_ID	Sequential identification number assigned to each waste stream to serve as a key.	Assigned	Integer
EPA_ID	Facility identification number.	Generator and NHWCS	Alphanumeric(12)
WASTE_STREAM_NMBR	Sequential identification number assigned to specific waste streams generated or managed by sampled facilities.	Generator and NHWCS	Integer
BRS_FORM	Form on which the waste stream was reported (Form GM or Form WR) in the 1993 Biennial Reporting System (BRS) database.	Generator and NHWCS	Alphanumeric(2)
SIC_CODE	The Standard Industrial Classification code used to identify the primary business activity associated with the facility that reports the waste stream.	Generator and NHWCS	Alphanumeric(4)
STREAM_TYPE	Indicates whether a waste stream is an as-generated stream (AG) or a treatment residual (RS).	Generator and NHWCS	Alphanumeric(2)
PHYSICAL_FORM	Indicates the original physical form of a waste stream, either a solid (SO), a semi-solid (SL), or a liquid (LI).	Derived from survey data	Alphanumeric(2)
WASTEWATER_FORM	“Y” indicates that the waste stream is in a wastewater form; “N” indicates non-wastewater form.	Generator and NHWCS	Alphanumeric(1)
WASTE_STREAM_DESC	Text description of the waste stream.	NHWCS	Alphanumeric(255)
WASTE_CODES	EPA waste codes carried by the waste stream.	Generator and NHWCS	Alphanumeric(255)
BRS_FORM_CODE	Waste form code reported in 1993 BRS.	NHWCS	Alphanumeric(4)
BRS_ORIGIN_CODE	Origin code reported in 1993 BRS.	NHWCS	Alphanumeric(3)
BRS_SOURCE_CODE	Source code reported in 1993 BRS.	NHWCS	Alphanumeric(3)

Field Name	Description	Source	Format Type
PRIMARY_TRT_METHOD	System code designating reported primary treatment method for waste stream.	NHWCS	Alphanumeric(4)
SECONDARY_TRT_METHOD	System code designating reported secondary treatment method for waste stream, if any.	NHWCS	Alphanumeric(4)
TOT_QTY_UNWEIGHTED	Unweighted waste quantity for each waste stream, in tons.	Generator and NHWCS	Numeric(25,15)
SAMPLING_WEIGHT	Sampling weight for the selection of 20 major waste streams if more than 20 waste streams are generated by or managed at the facility.	NHWCS	Numeric(25,15)
AGGREGATE_WEIGHT	Sampling weight used to account for the aggregation of several similar or "like" waste streams.	NHWCS	Numeric(25,15)
NATIONAL_WEIGHT	Weight to adjust waste stream quantity to reflect national totals.	Generator	Numeric(25,15)
TOT_QTY_WEIGHTED	Waste stream quantity weighted to reflect facility totals.	Derived from survey data	Numeric(25,15)
WASTE_SOURCE	Source of generated waste. Entries are either "Generated On-Site" or "Received From [EPA_ID]."	NHWCS	Alphanumeric(30)
DATA_SOURCE	Indicates whether the waste stream comes from the Generator Survey ("G") or the NHWCS ("N") dataset.	Assigned	Alphanumeric(1)
HAZ_WASTE_TYPE	Indicates the type of hazardous waste in the stream, either listed ("L") or listed and characteristic ("LC").	Assigned	Alphanumeric(2)
NUMBER_OF_STREAMS	Indicates the number of waste streams represented by the model waste stream when weighted to national totals.	Generator and NHWCS	Numeric(25,15)
SUBD_DESTINATION	Indicates the likely Subtitle-D disposal destination(s) for the waste stream.	Assigned	Alphanumeric(14)
STABILIZED	Indicates whether or not the waste stream is likely to be stabilized and therefore "less mobile." Either 'Y' for 'Yes' or 'N' for 'No'.	Assigned	Alphanumeric(1)

Field Name	Description	Source	Format Type
TREAT1	First treatment in treatment train.	Assigned	Alphanumeric(12)
TREAT1_TYPE	Indicates whether the first treatment is a listed treatment (i.e., “LT”) or a characteristic treatment (i.e., “CT”).	Assigned	Alphanumeric(2)
TREAT2	Second treatment in treatment train (if applicable).	Assigned	Alphanumeric(12)
TREAT2_TYPE	Indicates whether the second treatment is a listed treatment (i.e., “LT”) or a characteristic treatment (i.e., “CT”).	Assigned	Alphanumeric(2)
TREAT3	Third treatment in treatment train (if applicable).	Assigned	Alphanumeric(12)
TREAT3_TYPE	Indicates whether the third treatment is a listed treatment (i.e., “LT”) or a characteristic treatment (i.e., “CT”).	Assigned	Alphanumeric(2)
TREAT4	Fourth treatment in treatment train (if applicable).	Assigned	Alphanumeric(12)
TREAT4_TYPE	Indicates whether the fourth treatment is a listed treatment (i.e., “LT”) or a characteristic treatment (i.e., “CT”).	Assigned	Alphanumeric(2)
FACILITY_TYPE	Indicates whether the facility is a small- or medium-quantity generator (“SQ”), a large-quantity generator (“LQ”), or a treatment and disposal facility (“TDF”).	Derived from survey data	Alphanumeric(3)
MANAGE_LOCATION	Indicates the location of the waste streams, either on-site (“ON”) for generator facilities (SQ or LQ) or off-site (“OFF”) for TSDFs.	Derived from survey data	Alphanumeric(3)
IMP_COST	Waste stream-specific cost of implementing an HWIR exemption for the waste stream.	Assigned	Numeric(25,15)
NOS_AGG	Number of waste streams aggregated.	NHWCS	Numeric(25,15)
NOS_SAMP	Number of waste streams sampled.	NHWCS	Numeric(25,15)
NOS_LOW	Low bound of number of waste streams.	NHWCS	Numeric(25,15)

Field Name	Description	Source	Format Type
NOS_HIGH	High bound of number of waste streams.	NHWCS	Numeric(25,15)
PT_PHYSICAL_FORM	Indicates the physical form of the waste stream post treatment, either a solid (SO), a semi-solid (SL), or a liquid (LI).	Assigned	Alphanumeric(2)
NHWCS_SITE	Indicates whether a facility from the Generator Survey also has data from the NHWCS survey. Used for scaling the model.	Assigned	Alphanumeric(1)

Table 2: HWIR_SURVEY_CONSTITUENTS

Field Name	Description	Source	Format Type
STREAM_ID	Sequential identification number assigned to each waste stream to serve as a key.	Assigned	Integer
CONSTITUENT_ID	Sequential numbering system assigned to each constituent number to serve as a key.	Assigned	Integer
CAS_NUMBER	Chemical Abstract Service (CAS) number for the constituent in the waste stream.	Generator and NHWCS	Alphanumeric(12)
WHOLE_WASTE_CONC	Whole waste concentration of the constituent; average or low end of range, in parts per million.	NHWCS	Numeric(25,15)
LEACHATE_CONC	Leachate concentration of the constituent; average or low end of range, in parts per million	NHWCS	Numeric(25,15)
CHEMICAL_MASS	Chemical mass of the constituent in the waste stream.	NHWCS	Numeric(25,15)
WEIGHTED_MASS	Weighted chemical mass of the constituent in the waste stream. Calculated by multiplying CHEMICAL_MASS by weighting factors SAMPLING_WEIGHT and AGGREGATE_WEIGHT.	NHWCS	Numeric(25,15)

Field Name	Description	Source	Format Type
CONST_CONC_LOW	Lower bound of constituent concentration range reported, in parts per million.	Generator	Numeric(25,15)
CONST_CONC_HIGH	Upper bound of constituent concentration range reported, in parts per million.	Generator	Numeric(25,15)
LEACHATE_CONC_LOW	For non-wastewaters, the lower bound leachate concentration, in parts per million.	Generator	Numeric(25,15)
LEACHATE_CONC_HIGH	For non-wastewaters, the upper bound leachate concentration, in parts per million.	Generator	Numeric(25,15)
CONST_CONC_AVE	The average of the upper and lower bound constituent concentrations, in parts per million.	Derived from survey data	Numeric(25,15)
LEACHATE_CONC_AVE	For non-wastewaters, the average of the upper and lower bound leachate concentrations, in parts per million.	Derived from survey data	Numeric(25,15)
CHEMICAL_MASS_HIGH	Chemical mass of the constituent in the waste stream, based on high end of constituent concentrations range.	Generator	Numeric(25,15)
CHEMICAL_MASS_LOW	Chemical mass of the constituents in the waste stream, based on low end of constituent concentrations range.	Generator	Numeric(25,15)

Table 3: HWIR_TREATMENT_COSTS

Field Name	Description	Format Type
RANGE_END	The upper end of the quantity range that the weight falls under. “99” represents all quantities above the highest range end; “0” represents the residual factor.	Integer
DEACTIVATION	The cost per ton of using deactivation to treat waste streams based on the RANGE_END.	Numeric(9,2)
INCINERATION	The cost per ton of using incineration to treat waste streams based on the RANGE_END.	Numeric(9,2)
NEUTRALIZATION	The cost per ton of using neutralization to treat waste streams based on the RANGE_END.	Numeric(9,2)

Field Name	Description	Format Type
HTMR	The cost per ton of using HTMR to treat waste streams based on the RANGE_END.	Numeric(9,2)
STABILIZATION	The cost per ton of using stabilization to treat waste streams based on the RANGE_END.	Numeric(9,2)
VITRIFICATION	The cost per ton of using vitrification to treat waste streams based on the RANGE_END.	Numeric(9,2)
RETORT	The cost per ton of using retort to treat waste streams based on the RANGE_END.	Numeric(9,2)
UIC	The cost per ton of using underground injection to treat waste streams based on the RANGE_END.	Numeric(9,2)
FUEL_SUBSTITUTION	The cost per ton of using fuel substitution to treat waste streams based on the RANGE_END.	Numeric(9,2)
ACID_REG	The cost per ton of using acid regeneration/recycling to treat waste streams based on the RANGE_END.	Numeric(9,2)

Table 4: HWIR_DISPOSAL_COSTS

Field Name	Description	Format Type
RANGE_END	The upper end of the quantity range that the weight falls under. “99” represents all quantities above the highest range end.	Integer
SUBTITLE_C	Cost per ton of waste stream disposal in a Subtitle C facility.	Numeric(9,2)
SUBTITLE_D	Cost per ton of waste stream disposal in a Subtitle D facility.	Numeric(9,2)