NEI Input Format (NIF)

Quality Assurance (QA) Software

International Emission Inventory Conference

Training Course

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OAQPS - EFIG

What does the QA software do?

FORMAT Checks

CONTENT Checks

MS Access Database

What kind of Format Checks?

NEI Input Format (NIF) Checks

Tables - Existence

Fields - Properties

Referential Integrity - how the tables relate

Tables - Point (8), Area (5) and Mobile (3)

Point Tables:

- Transmittal (TR)
- Site (SI)
- Emission Unit (EU)
- Emission Release Point (ER)
- Emission Process (EP)
- Control Equipment (CE)
- Emission Period (PE)
- Emission (EM)

Field Properties:

Name - EXACT

Data Type - Text, Numeric types

Length - Maximum for each field

Mandatory - All Primary Key (PK) Fields plus

Referential Integrity - How do the tables relate?

Primary Key (PK) Fields - Unique

One to Many Relationship* - Hierarchy

*Most tables have 1-many but there are exceptions

Primary Key Fields - Make Each Record Unique

TR - State, County

There is no more than one record for each county in the TR table.

SI - State, County, Site ID

There is no more than one record for each site in the SI table.

Primary Key Fields By Table

TR

State, County

SI

State, County, Site ID

EU

State, County, Site ID, Unit ID

EP

State, County, Site ID, Unit ID, Process ID

PE

State, County, Site ID, Unit ID, Process ID, Start and End Dates

EM

State, County, Site ID, Unit ID, Process ID, Pollutant, EmissRelPtID, Start and End Dates

ER

State, County, Site ID, EmissRelPt ID

CE

State, County, Site ID, Unit ID, Process ID, pollutant

One to Many* Relationship - Hierarchy

For every unique record in the parent table,
there must be at least one record in the child table

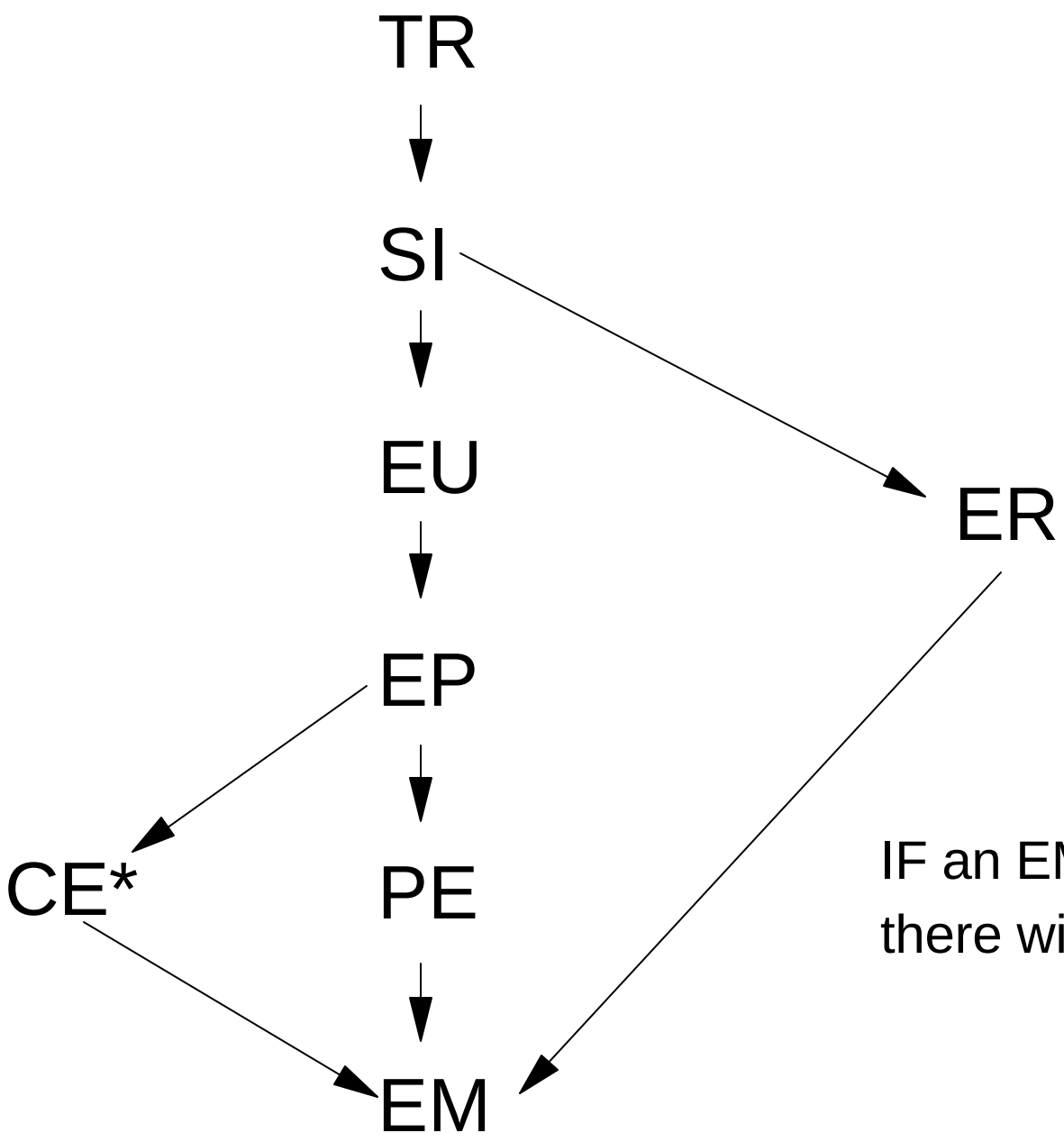
For every county in the TR table,
there must be at least one site in the SI table

No record is necessary for a county with no plants

For every site in the SI table,
there must be a county record in the TR table

*Most tables have 1-many but there are exceptions

One to Many Relationship - Hierarchy



IF an EM record was controlled, there will be a CE record

*Most tables have 1-many but there are exceptions

Integrity Violations- How do the tables NOT relate?

Duplicates - More than one record for the same PKs even though the other fields have different info

2 records for the same county even though contact info is different.

Orphans - a record in the child table without a corresponding record in the parent table(s)

Emission records in the EM table but no Records for that Site in the SI table

Widows (childless parents) - a record in the parent table with no records in the child table(s)

A County in the TR table with no emissions in the EM table

What are Content Checks?

Acceptable Codes - NIF Code Table Database

- QA/QC Code Table Database

Numeric Ranges - Maximum and Minimum

Geographic Data - Coordinate checks

Code Table Database

A Table for each coded field

Tables in the Code Table Database:

address types	Materials	Unit Codes*
contact type	Material I/O	XY coordinate codes
control device types	Max Emission Rate	
county fips	NAICS Codes	
county boundary	Pollutant Codes	
emiss_calculat_meth	Reliability Indicator	
emission release	Rule Effectiveness Method	
emission type	SCC	
emission unit	SIC	
facility category	Source Type	
inventory type	Stack Parameters	
MACT codes	state fips	
MACT Compliance Status	transaction type	

* used in several fields

Coded Fields By Table *:

TR

Transaction, Inventory, Source, and Contact Types

SI

Facility Category, Address Type, Site MACT and MACT Compliance

EU

Design Capacity Unit Numerator and Denominator

ER

Emission Release Point and XY Coordinate Types, Fugitive Dim. Unit

EP

SCC, Process MACT and MACT Compliance Codes

CE

Pollutant, Control Device Types

PE

Throughput Unit Numerator, Material, Material I/O

EM

Emission Unit Numerator, Emission Type, Factor Unit (num/den), Material, Material I/O, Emission Calculation Method, EF Reliability Indicator, Rule Effect Meth, Emiss Data Level

*(State and County FIPS in every Table)

TR Table Coded Fields

State and County FIPS in every Table
(County Code 3 DIGITS; 1 is not equal to 001)

Transaction Type: 00 - Original OR 05 - Replacement

Inventory Type: CRIT, HAP, or CRITHAP
(CRITERIA is not equal to CRIT)

Source Type: POINT, AREA, ON-ROAD MOBILE
NON-ROAD MOBILE, BIOGENIC

Contact Types:
(There is no 06)

Code	Description
01	Facility/Plant
02	Data Transmittal
03	Preparer
04	Receiving Location
05	Reporting Location

Coded Fields:

MUST BE EXACTLY AS IN CODE TABLE

- EXACT SPELLING
- Leading Zeros
- But not Case Sensitive (sort of)

UNK or UNKNOWN is not in many of the code tables

If you are using some converter program,

- your database should have the standards required or the converter program will not output your data as you expect it to be

Numeric Range Checks

- Emission Release Point Parameters
- Annual Emission Values
- Emission Period and Process Activity
- Other Temporal Fields

Emission Release Point Parameters

Different from Data Augmentation Procedures

EFIG Augments data with ranges specific to SCC

Software checks NATIONAL RANGES not by SCC

with the intention to point out any value above

"normal" though it may very well be real

Release Point Parameters	Min	Max
Release Point Height (feet)	.01	700
Release Point Height Fugitive (feet)	0	100
Release Point Diameter (feet)	.01	50
Exit Gas Temperature (degrees F)	50	1800
Exit Gas Velocity (feet/second)	.01	560
Exit Gas Flow Rate (cubic feet/second)	0	200,000

Annual Emission Values

Annual: Emission Type = 30 (entire period)
AND the dates must be annual, 20XX0101
AND 20XX1231 AND the Units must be in Tons

Pollutant	Point Max	Area Max	Mobile Max
VOC	300	1700	1100
NOx	1500	1250	1350
CO	600	5500	10250
SO2	5000	350	50
PM-FIL, PM-PRI, PM10-FIL, PM10-PRI	200	5000	50
PM25-FIL, PM25-PRI, PM-CON	150	1400	30
NH3	100	1250	50

Checked for the purpose of pointing out any
value above "normal" and worth investigating

Emission Period and Process Activity

Number of Days per week ≤ 7

Number of Weeks per Year ≤ 52

Number of Hours per Day ≤ 24

Number of Hours per Year ≤ 8760 non-leap year

≤ 8784 leap year

Sum of Seasonal throughputs ≤ 100 Percent

Temporal Fields: Start and End Date and Time

Months from 1 to 12

Hours from 0 to 24

Minutes 0 to 59

Geographic Data - Coordinate checks are made

IF all of the format is correct in the locational fields

(if the state fips is not the correct code for example, the software cannot make the locational checks)

Once the format is verified as correct,

the Check to see if the coordinates fall within the State Boundary can be made

State Boundary - Boxes were drawn around the

State to give Min/Max Lat/Long Coordinates which are in the StateFIPS Code Table of the QA/QC codes table database

If the coordinates fall within the State Boundaries,

the Check to see if the coordinates fall
within the County Boundary can then be made

County Boundary - Max/Min Lat/Lon Coordinate Box

is located in the table Co_bdry which also resides in the QA/QC codes table database

REVIEW:

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