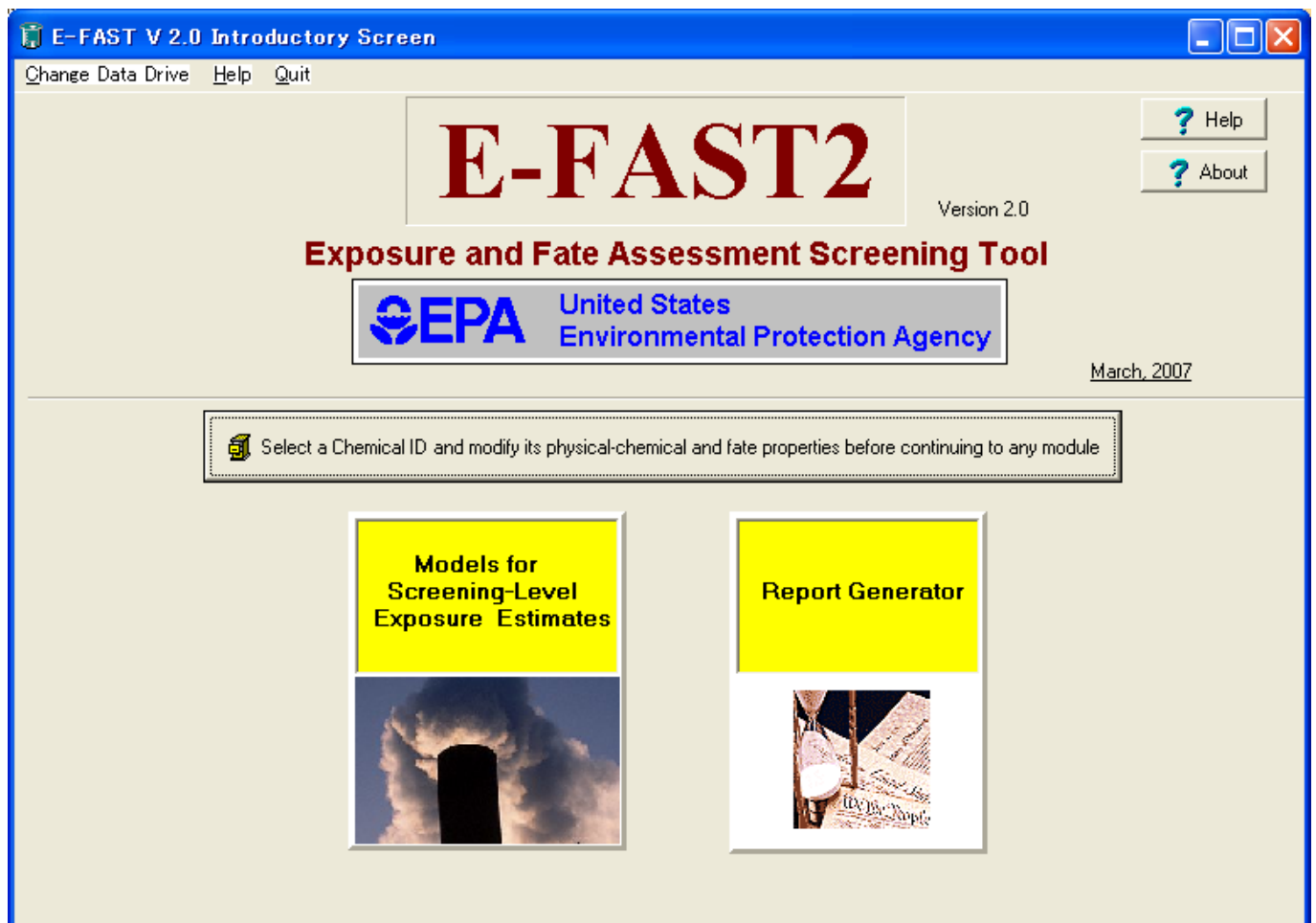


モデル名称	E-FAST(Exposure and Fate Assessment Screening Tool)		
開発国	米国	開発機関 開発者	EPA
入手方法 (URL・価格等)	http://www.epa.gov/oppt/exposure/pubs/efast.htm		
モデルの 目的概要	環境(大気、水域、埋め立て)への排出及び消費者製品からの排出による化学物質の環境中濃度をスクリーニングレベルで推定するツール。吸入、経皮、経口曝露量を推定可能。		

操作手順

1.EFAST プログラムのアイコンをクリックして実行する。



2. 「Select a Chemical ID and modify its physical-chemical and fate properties before continuing to any module」 タブをクリックする。

3. 「Chemical ID」 タブから ID を選択し、パラメーターを入力した後、「Select This Chemical ID」

をクリックする。

Help

PChem/Fate Inputs Screen

Modules

General Population and Ecological Exposure From Industrial Releases

- Surface Water
- Landfill
- Ambient Air
- Down-the-Drain
- Consumer Exposure Pathway
- Probabilistic Dilution Model (PDM)

Chemical ID: tmpcas

Chemical Name: metane

Bioconcentration Factor: No BCF No BCF available?

Wastewater Treatment Removal: 9.00 %

Adsorption to Wastewater Treatment Sludge: 9.00 %

Drinking Water Treatment Removal: 9.00 %

Groundwater Migration Descriptor: Slow

Fugitive Air Emissions Removal: 9.00 %

Stack Air Emissions Removal: 9.00 %

Consumer Product Weight Fraction (central tendency): 1.00

Consumer Product Weight Fraction (high end): 1.00

Molecular Weight: 2.00 g/mole

Vapor Pressure: 100.00 torr (mm Hg)

Select This Chemical ID

・左側にあるモジュールをチェックしないと次の画面にあるモジュールに入れない。

4.最初の画面に戻ったら「Models for Screening-Level Exposure Estimates」タブをクリックする。



・ 4 つ(「General Population and Ecological Exposure from Industrial Releases」、「Down The Drain」、「Consumer Exposure Pathway」、「Probabilistic Dilution Model(PDM)」)のモジュールから一つ選択が出来る。

4-1. 4つのモジュールで「General Population and Ecological Exposure from Industrial Releases」タブをクリックした場合。

Screening Level Inputs

Release Info Page

General Release Info Select an SIC Code

Chem ID/Rel #
tmpcas_1

Delete selected run

Enter Release Activity Below:

Sites 1 (# sites with identical releases)

Next Release Activity

General Remarks

Select the types of releases (surface water, landfill, ambient air). Next, input the amount of release and number of days/year of release. For surface water, you must also select a facility or SIC code and concentrations of concern if required. For ambient air, you must calculate air concentrations before continuing if selected.

Surface water
 Landfill
 Ambient air

Surface Water | Landfill | Ambient Air

No dose calculations required
 SW Comment

Release 9.00 kg/site/day Days per year of Release: 9 days/yr

Choose facility or SIC code analysis:

Facility NPDES #, name:

SIC Code Description: Leather Tanning, Finishing

Include PDM run

Release activities completed? Continue to Exposure Factors page

・放出のタイプ(Surface Water, Landfill, Ambient air)を選択できる。

4-1-1. 「Surface Water」タブでは「Facility」と「SIC Code」の中で一つをクリックする。

4-1-1-1. 「Facility」をクリックした場合、施設の名前などの入力から選択が出来る。

Screening Level Inputs

Release Info Page

General Release Info Select a facility

Release Information - Facility Selection Screen Help

Locate facilities where this field has the following substring:

Search by state
 Search by region

NPDES entries in this model must use the following format:
two letter state abbreviation followed by seven digits.

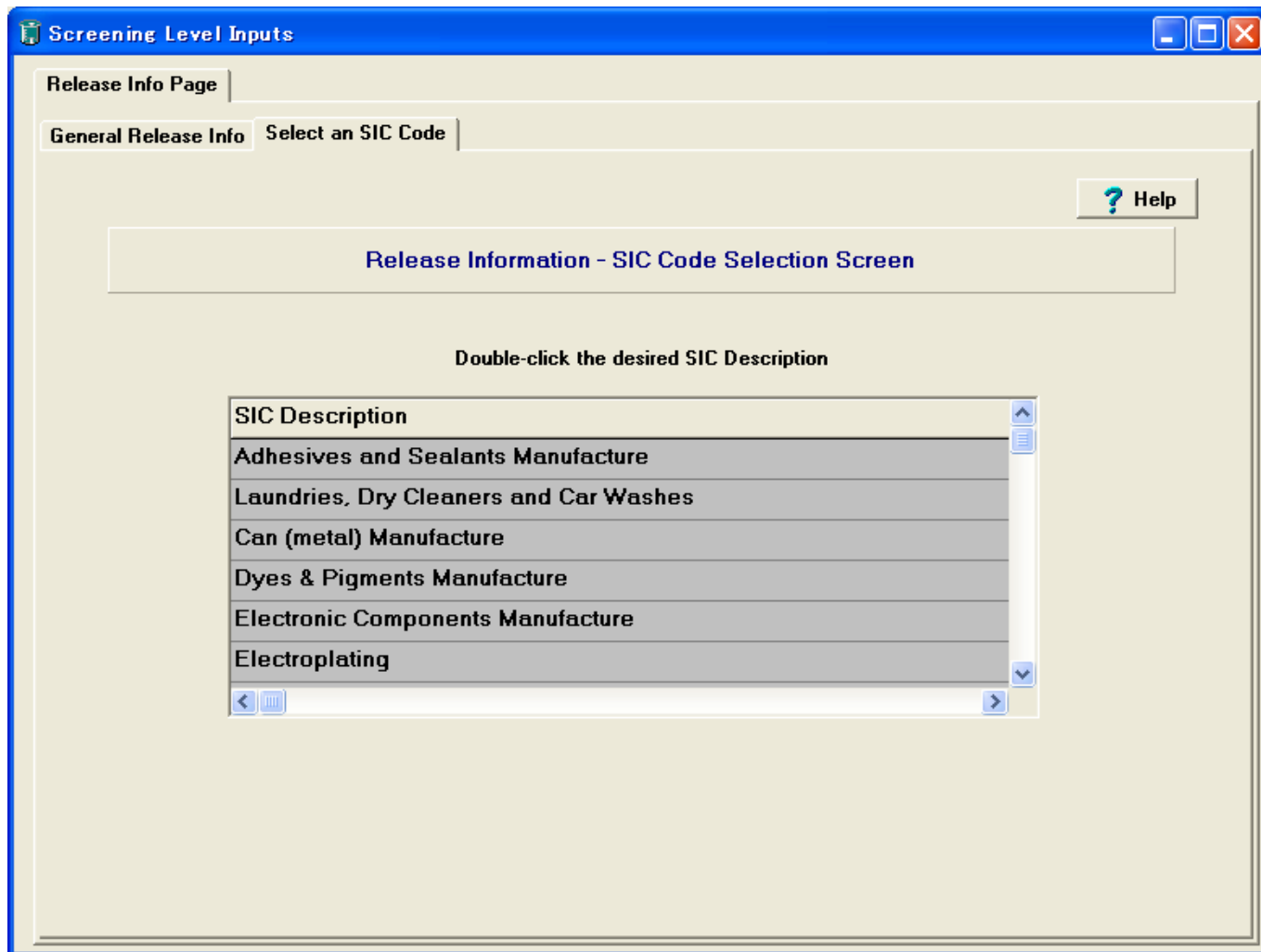
Area of initial search Perform search for facilities

Double click the desired facility Note: This is an active facility.

NPDES	FACILITY NAME	LOCATION	REACH	REACH NAME
WI0035866	SCHOOL DISTRICT OF SUPERIO	SUPERIOR WI	04010301013	NEMADJI R

Search for endangered species in the vicinity of this facility

4-1-1-2. 「SIC Code」 をクリックした場合、記述された項目の中から選択が出来る。



4-1-2. 「Landfill」タブでは「Non-sludge」と「Sludge」の入力ができる。

Screening Level Inputs

Release Info Page

General Release Info Select an SIC Code

Chem ID/Rel #
tmpcas_1

Delete selected run

Enter Release Activity Below:

Sites 1 (# sites with identical releases)

Next Release Activity

General Remarks

Select the types of releases (surface water, landfill, ambient air). Next, input the amount of release and number of days/year of release. For surface water, you must also select a facility or SIC code and concentrations of concern if required. For ambient air, you must calculate air concentrations before continuing if selected.

Surface water Landfill Ambient air

Surface Water Landfill Ambient Air

No dose calculations required

Landfill Comment

Non-sludge: 0.00 kg/site/day 0 days/yr
Sludge: 0.81 kg/site/day 9 days/yr

Release activities completed? Continue to Exposure Factors page

4-1-3. 「Ambient Air」タブでは「Stack Releases」と「Fugitive Releases」の入力ができる。なお「Max annual avg air concentration」と「Max 24 hr avg air concentration」を入力するためには「Calculate Air Concentration」をクリックする。

E-FAST2 Downwind Concentration Predictor

E-FAST2 will use EPA's SCREEN3 Model to predict the downwind exposure concentration to your chemical.

Chemical ID tmpcas_1

Stack Release 23 kg/site/day 23 days/yr % removal via stack release 9

Fugitive Releases 23 kg/site/day 23 days/yr % removal via fugitive 9

Release Information Meteorological and Terrain Information

Ambient Temperature 293 K

Stack Parameter Data Fugitive Parameter Data

Stack Height 10 m Release Height 3 m

Inside Stack Diameter 0.1 m Length of Release Opening 10 m

Stack Gas Exit Velocity 0.1 m/sec Width of Release Opening 10 m

Stack Gas Temperature 293 K

Submit to SCREEN3 Model Return to E-FAST2

Results

	Stack	Fugitive
Max annual avg concentration:	1.78E-03	1.44E-02 mg/m ³
Max 24 hour avg concentration:	0.14	2.86 mg/m ³

・条件を入力した後、「Submit to SCREEN3 Model」タブをクリックすると「Max annual avg air

concentration」と「Max 24 hr avg air concentration」の数値が算出される。「Return to E-FAST2」をクリックして前の画面に戻る。

4-1-4. 「Release activities completed? Continue to Exposure Factors page」タブをクリックする。

Exposure Factors		
Chemical ID:	tmpcas	
Body weight:	71.80	kg
Exposure duration (cancer):	30.00	years
Averaging time (cancer):	75.00	years
Drinking water ingestion (chronic):	1.40	L/day
Drinking water ingestion (acute):	6.00	L/day
Fish ingestion (chronic):	6.00	g/day
Fish ingestion (acute):	129.00	g/day
Inhalation rate*:	0.55	m3/hr

* 24 hour/day exposure period is assumed

Calculate, save results, and display results pages

4-1-5. パラメーターを入力した後、「Calculate, save results, and display results pages」タブをクリックする。

4-1-6. 「Environmental Releases」、「SIC Code」、「Rivers」「Landfill」などの結果が算出される。

Screening Level Results Close

Environmental Releases | SIC Code | Landfill

Chem ID/Rel #
tmpcas.1

Environmental Release Results ? Help

Remarks

Release Activity: Number of Sites:

Release Values

	Surface Water	Landfill	Stack	Fugitive
Total Releases: (before treatment)	81.00 (kg/yr)	7.29 (kg/yr)	529.00 (kg/yr)	529.00 (kg/yr)
Release days/yr: (before treatment)	9.00	0.00/9.00	23.00	23.00
Per site release	9.00	0.00/0.81	23.00	23.00
	(kg/site/day)	(kg/site/day)	(kg/site/day)	(kg/site/day)

Print Page

・入力した条件によって結果のタブは変わる。

4-2. 4つのモジュールで「Down The Drain」タブをクリックした場合。

Disposal Model

Disposal Inputs

Consumer Disposal Inputs

? Help

Chemical ID:

Production Volume: kg/year

Exposure Duration: years

PDM Option

Run PDM (SIC Code Analysis)

Do NOT run PDM (SIC Code Analysis)

4-2-1.パラメーターを入力した後、「Run the Disposal Model」をクリックすると結果が算出される。

Disposal Model

Disposal Inputs | Disposal Results

Disposal Results

? Help

Production Volume: 23.00 kg/year
 WWT Removal: 9.00 %
 Release days: 365.00 days
 Bioconcentration Factor: 0.00 L/kg

Exposed Population: Adult
 Pretreatment release: 2.17E-07 g/person/day
 Post-treatment release: 1.97E-07 g/person/day

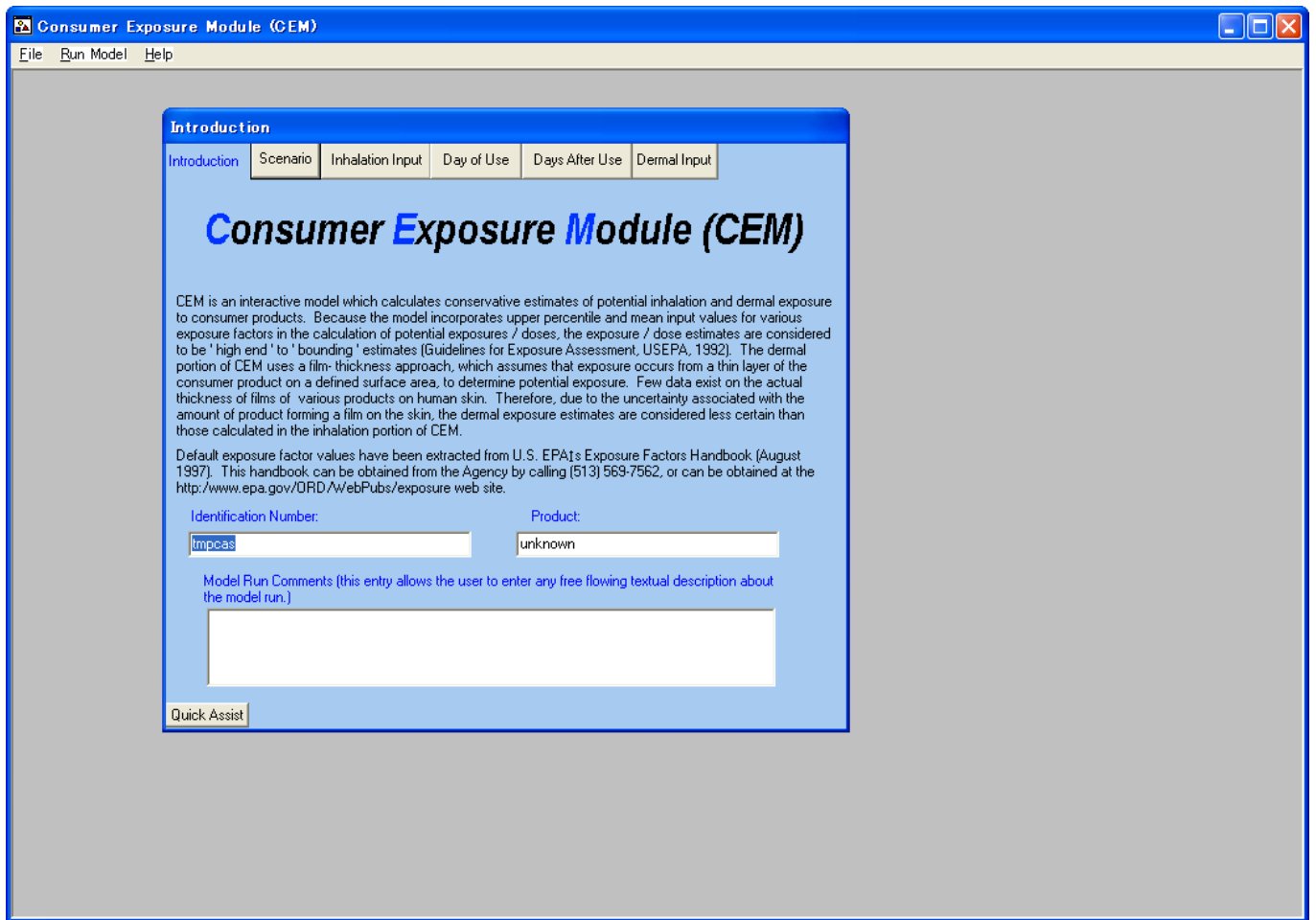
Print Page

Drinking Water Information | Fish Ingestion Information | Concentrations

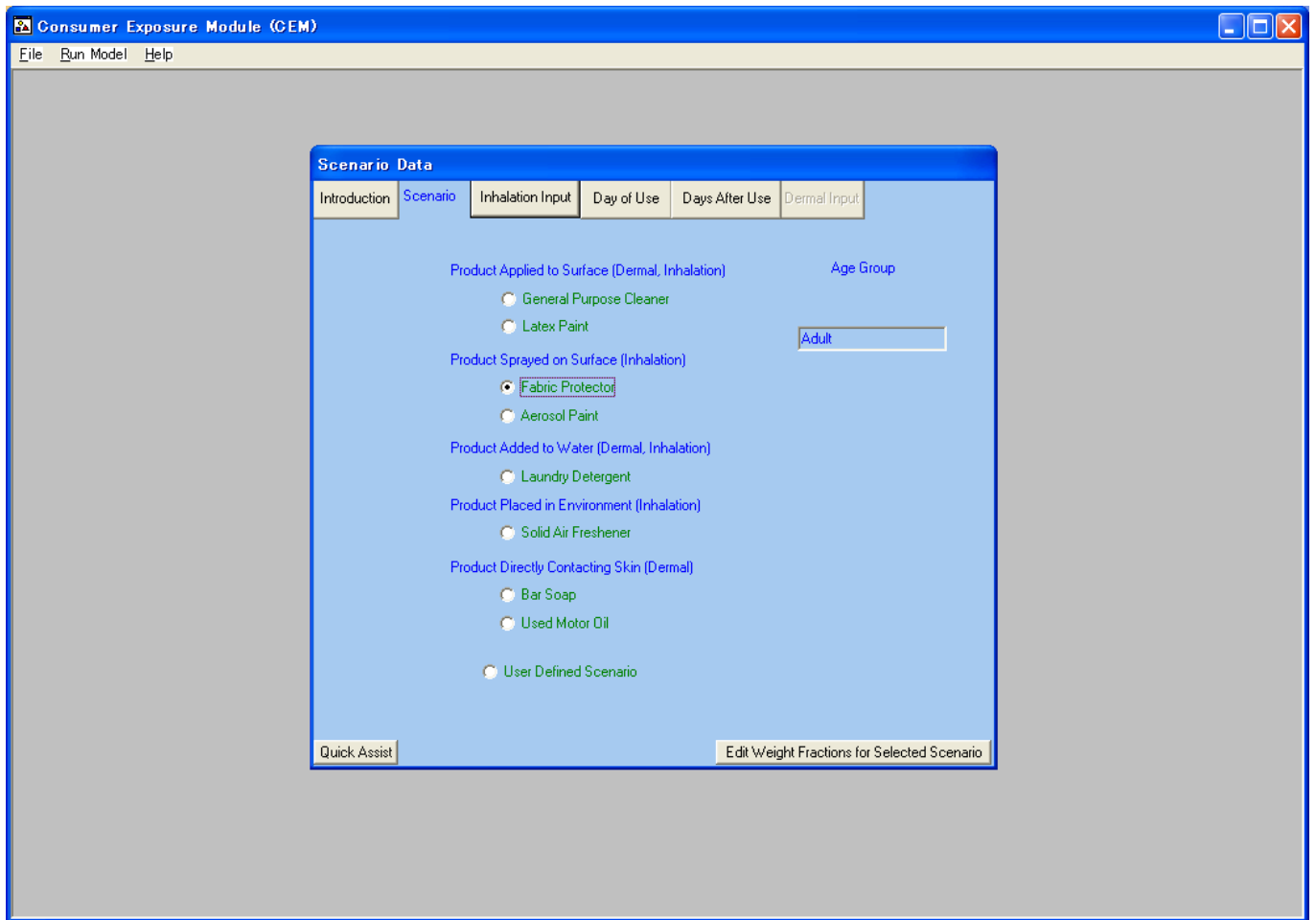
Drinking Water Exposure Estimates

Exposure Type	50%ile Res.	10%ile Res.	ED (yrs)	AT (yrs)	BW (kg)	IR (L/day)
Cancer						
LADDpot (mg/kg/day)	2.94E-12	4.99E-11	3.00	75.00	71.80	1.40
LADCpot (mg/L)	1.51E-10	2.56E-09	3.00	75.00	NA	NA
Acute						
ADRpot (mg/kg/day)	1.07E-09	2.36E-08	NA	1 day	71.80	6.00

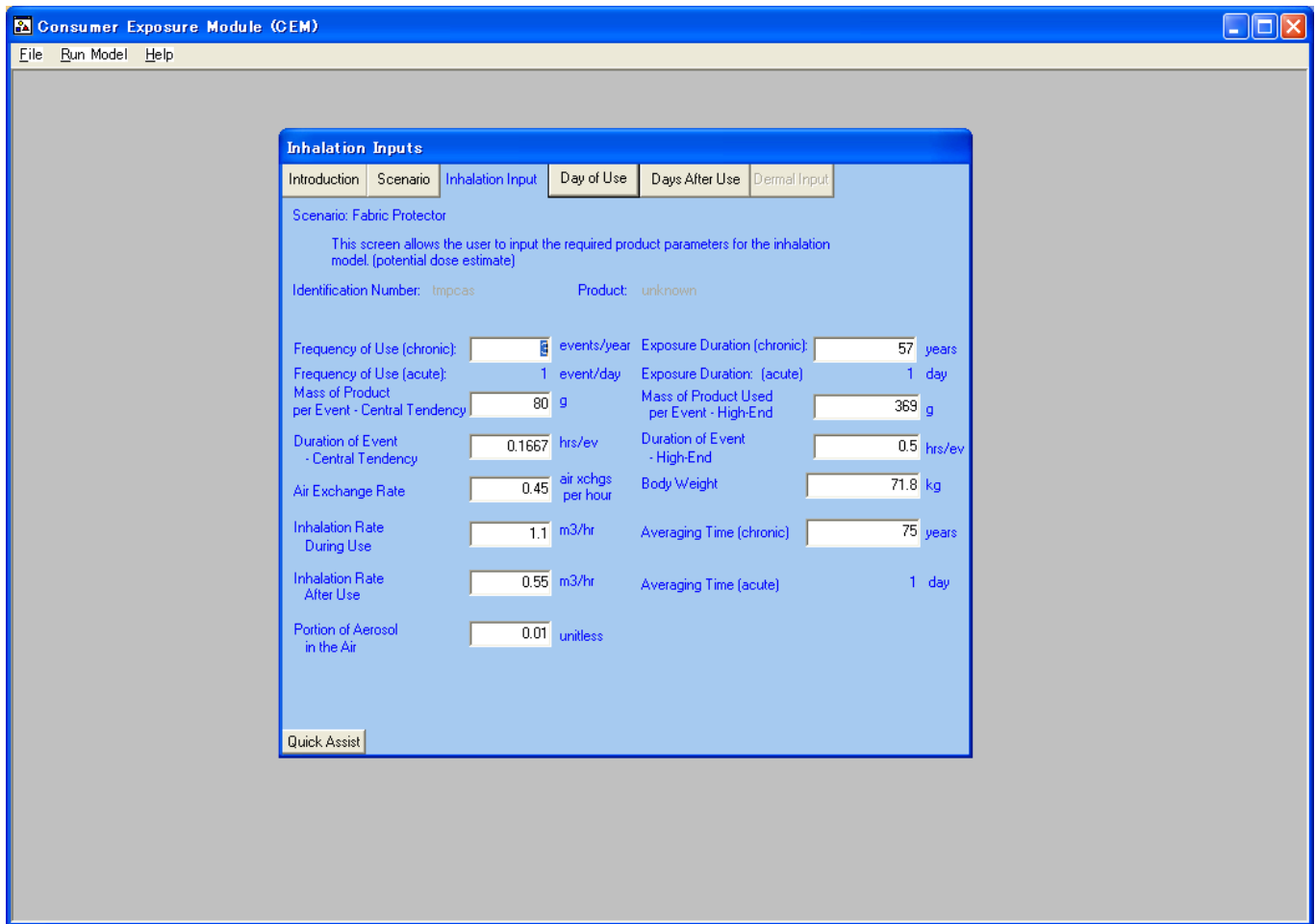
4-3. 4つのモジュールで「Consumer Exposure Pathway」タブをクリックした場合。



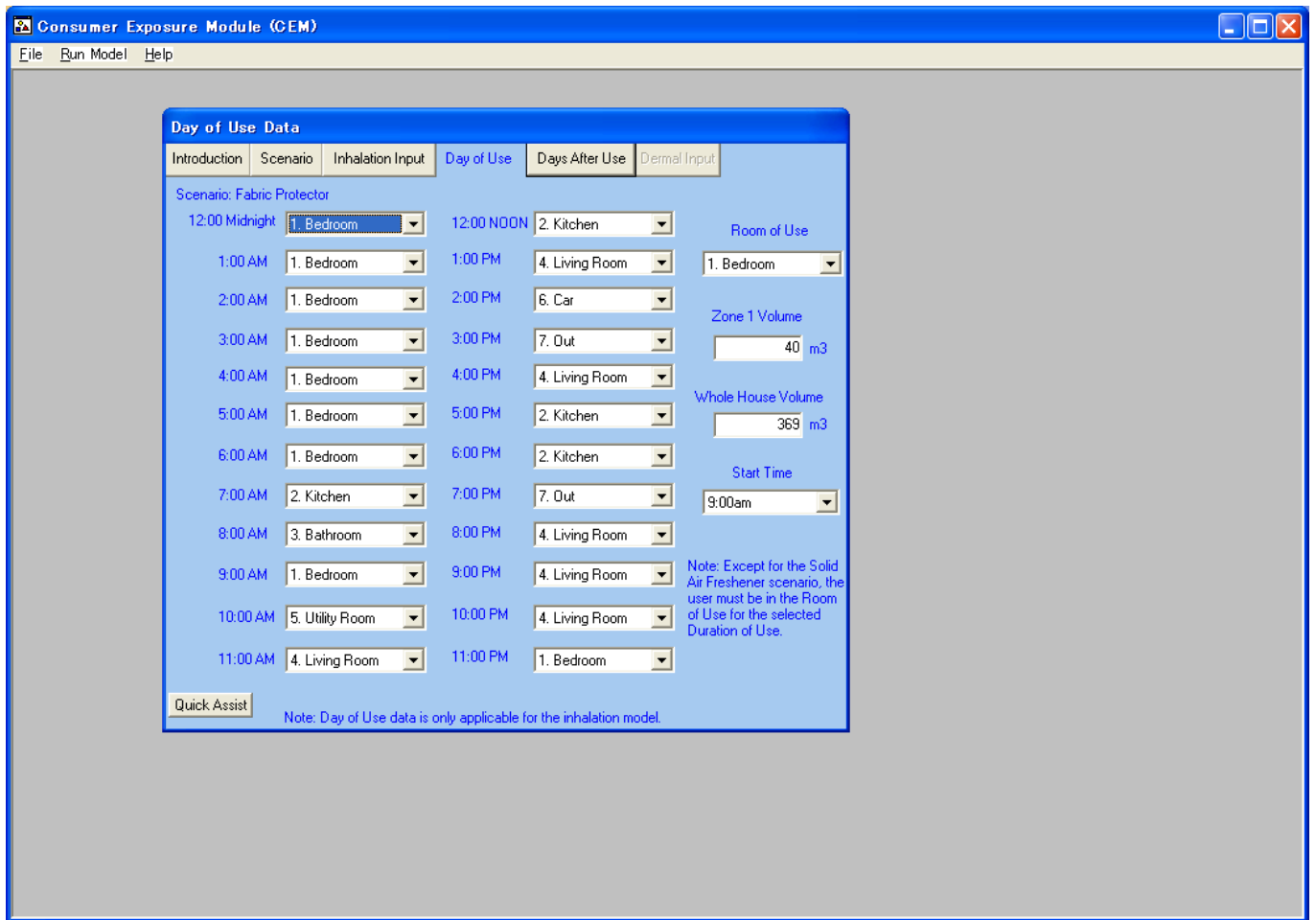
4-3-1. 「Scenario」 タブをクリックし、パラメーターを選択する。



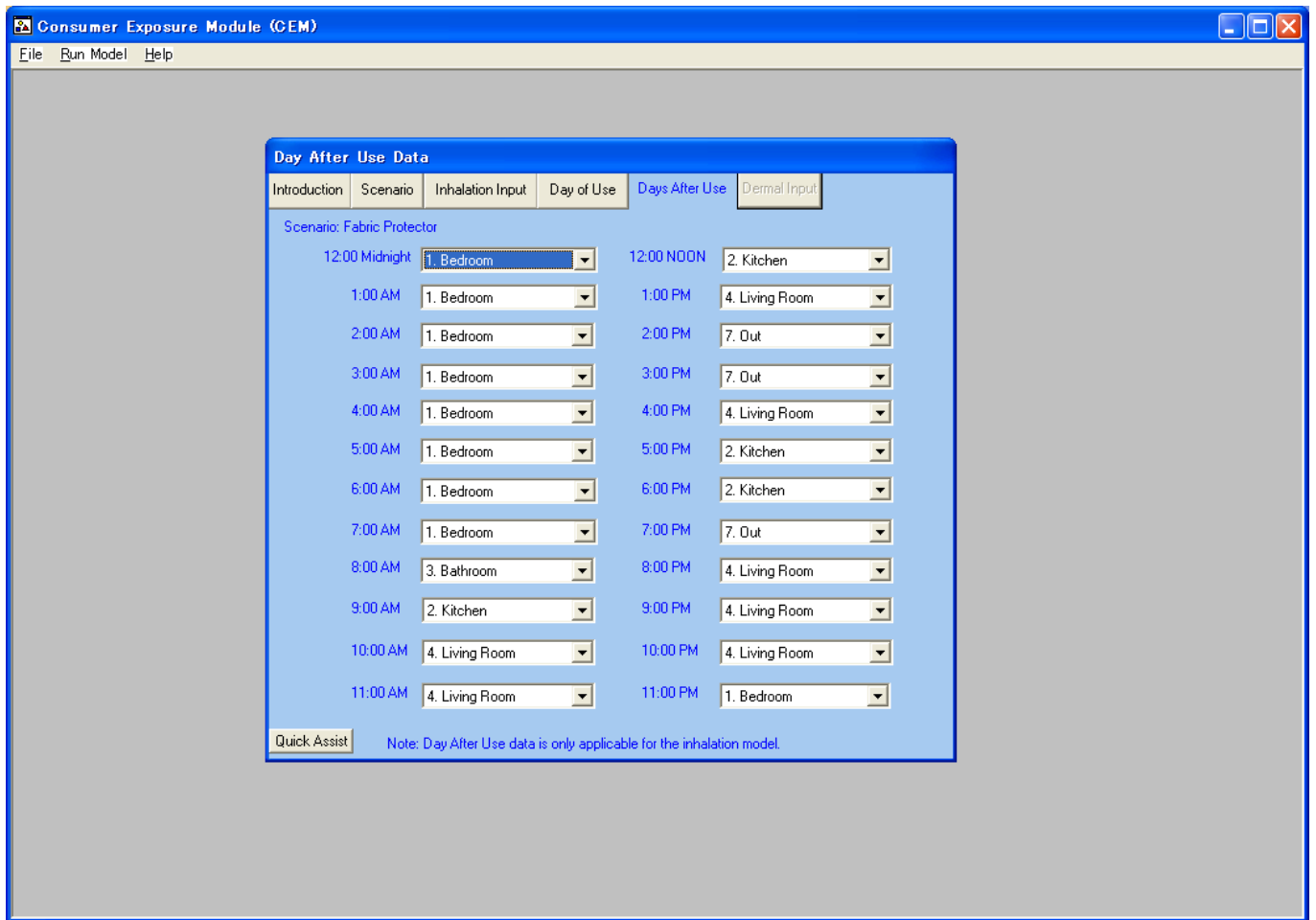
4-3-2. 「Inhalation Input」 タブをクリックし、数値を入力する。



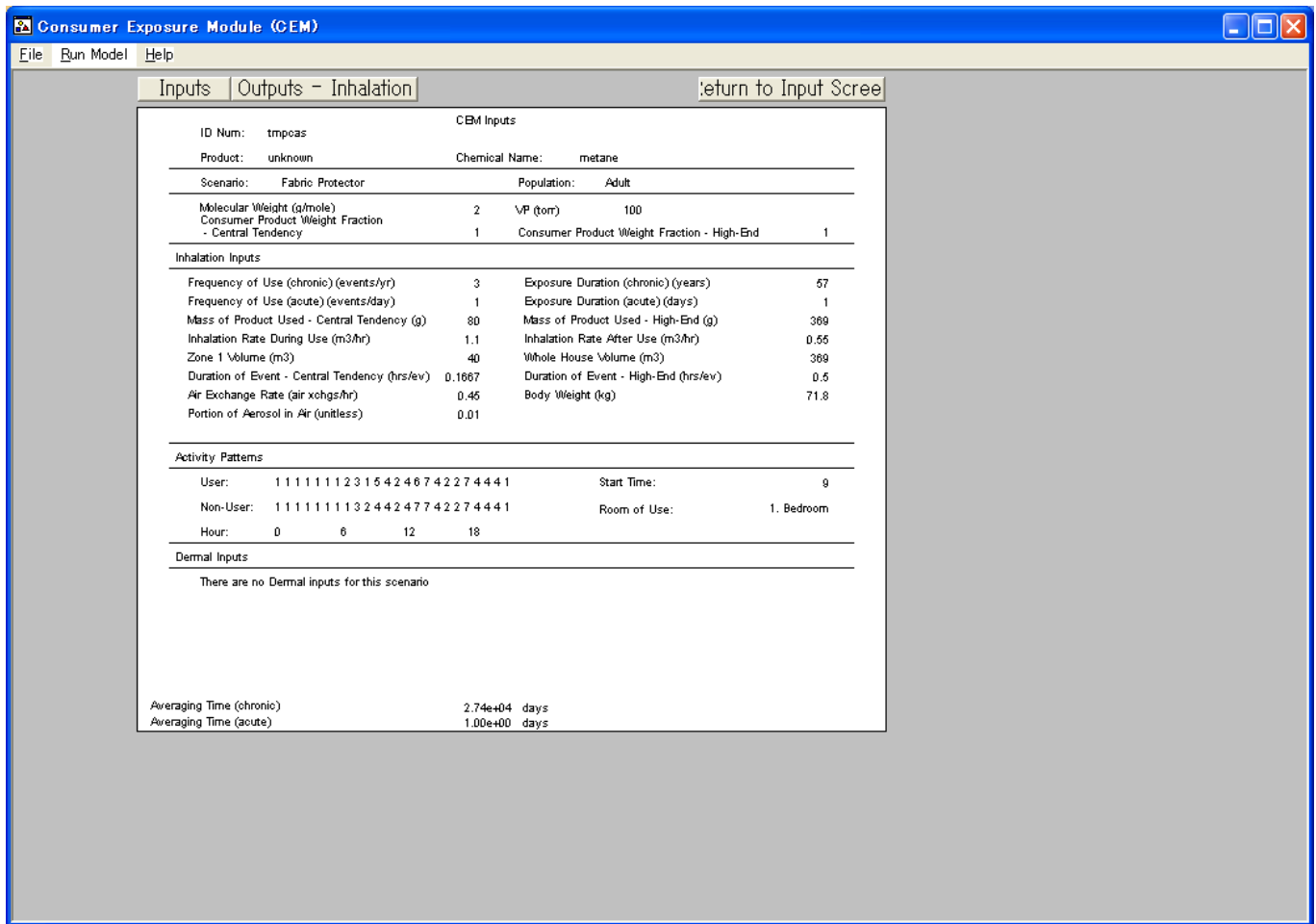
4-3-3. 「Day of Use」 タブをクリックし、パラメーターから条件を設定する。



4-3-4. 「Days After Use」 タブをクリックし、パラメーターから条件を設定する。



4-3-5. 「Run Model」の「Submit Date」タブをクリックすると結果が算出される。



4-4. 4つのモジュールで「Probabilistic Dilution Model(PDM)」タブをクリックした場合。

Screening Level Results Close

PDM Site | PDM SIC Code

PDM Site-Specific Page Help

Release Number: Note: this is an active site.

NPDES Number: Select a NPDES:

Release Activity: Discharge Type:

Facility Name: WWT Removal: %

Facility Location: Release Days: days/yr

Reach Number: Concentration of Concern: ug/L

Reach Name: Pretreatment Release: kg/site/day

Facility on Reach? Yes No Unk. Post-treatment Release: kg/site/day

Gaging Station ID: Mean Stream Flow: MLD

Gaging Station Period of Record: Low Stream Flow: MLD

Gaging Station Number of Observations: Effluent Flow: MLD

COC	Percent of Year COC Exceeded	Number of Days COC Exceeded	Release Days	Pretreat Load	WWT
(ug/L)	(%)	(Days)	(Days)	(kg/site/day)	(%)

4-4-1. 「PDM Site」タブではパラメーターの入力後、「Submit」をクリックすると、結果が算出される。

Screening Level Results Close

PDM Site | PDM SIC Code

PDM Site-Specific Page Help

Release Number: Note: this is an active site.

NPDES Number: Select a NPDES:

Release Activity: Discharge Type:

Facility Name: WWT Removal: %

Facility Location: Release Days: days/yr

Reach Number: Concentration of Concern: ug/L

Reach Name: Pretreatment Release: kg/site/day

Facility on Reach? Yes No Unk. Post-treatment Release: kg/site/day

Gaging Station ID: Mean Stream Flow: MLD

Gaging Station Period of Record: Low Stream Flow: MLD

Gaging Station Number of Observations: Effluent Flow: MLD

COC	Percent of Year COC Exceeded	Number of Days COC Exceeded	Release Days	Pretreat Load	WWT
(ug/L)	(%)	(Days)	(Days)	(kg/site/day)	(%)
23.00	1	5	9	9.00	9.00

4-4-2. 「PDM SIC Code」タブではパラメーターの入力後、「Submit」をクリックすると、結果が算出される。

PDM Site PDM SIC Code

PDM SIC Code Results ? Help

Release Number:

Release Activity:

SIC Code Description:

SIC Codes:

WWT Removal: %

Release Days: days/year

Concentration of Concern: ug/L

Pretreatment Release: kg/site/day

Post-treatment Release: kg/site/day

- High-end scenario
- Average case scenario

PDM SIC Code Estimates

COC (ug/L)	Percent of Year COC Exceeded (%)	Number of Days COC Exceeded (Days)	Release Days (Days)	Pretreat Load (kg/site/day)	WWT (%)	Analysis
3.00	1	3	3	3.00	9.00	High