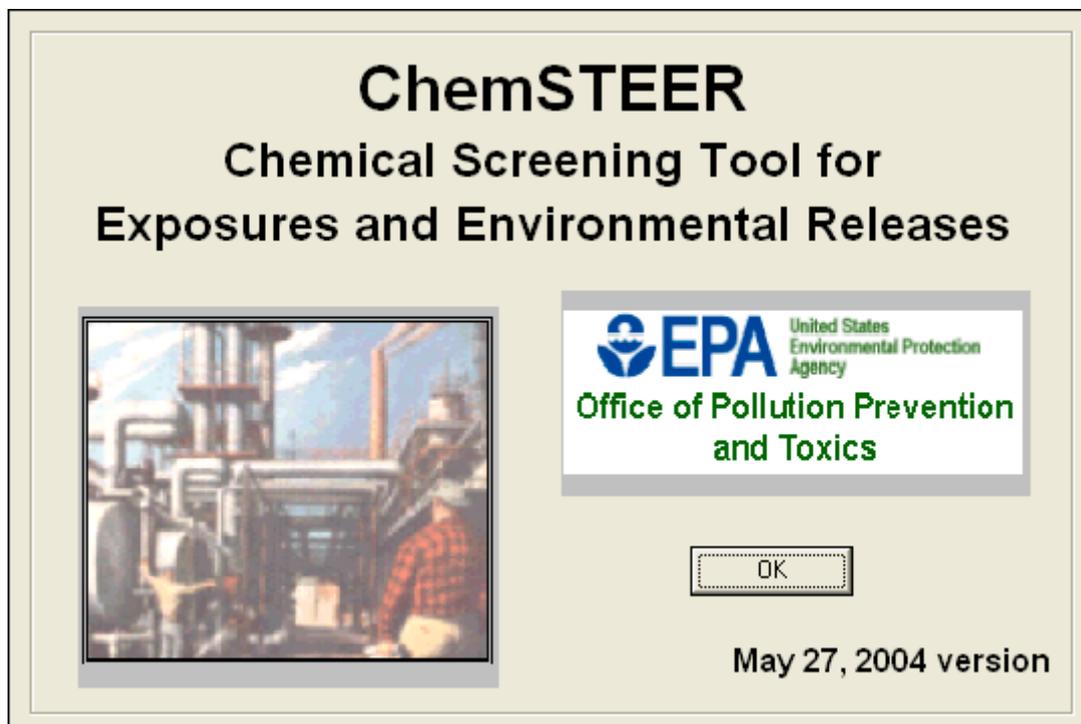


モデル名称	ChemSTEER		
開発国	米国	開発機関 開発者	EPA
入手方法 (URL・価格等)	<a href="http://www.epa.gov/oppt/exposure/pubs/chemsteer.htm">http://www.epa.gov/oppt/exposure/pubs/chemsteer.htm</a>		
モデルの 目的概要	作業環境(製造、加工、使用)における吸入及び経皮曝露及び環境(大気、水域、土壌)への排出量を推定するツール。		

## 操作手順



- 1 ChemSTEER のファイルを開き、「OK」のボタンをクリックする。

ChemSTEER 05/27/2004 Version

File Edit Preferences Reports Help

General | Chemical | Operations | Operation Parameters | Releases | Exposures | Optional Information

**General**

Assessment Type:  Consolidated Case:  Last Saved:

Status:

Fiscal Year:

Assessment Identifier:  Date:  CBI:  Yes Number of Contact Reports:

Assessors:

Name: <input type="text"/>	<input type="text"/>
Affiliation: <input type="text"/>	<input type="text"/>
Phone: <input type="text"/>	<input type="text"/>
Email: <input type="text"/>	<input type="text"/>

Company Name:

Street Address:

City:

State:  Zip:

Revision Notes / Assessment Overview:

2 「General」タブで「Update General Information」のボタンをクリックする。

**Update General Information**

Update or add the information below, then press OK to return to the main window.

Assessment Type:    
Status:    
Fiscal Year (yy):

Assessment Identifier:  Date:   CBI

Consolidated Case

Assessors:

Name: <input type="text"/>	<input type="text"/>
Affiliation: <input type="text"/>	<input type="text"/>
Phone: <input type="text"/>	<input type="text"/>
Email: <input type="text"/>	<input type="text"/>

Company Name:   
Street Address:   
  
City:   
State:   Zip:

Contact Information:

3 空欄に情報を入力し「OK」ボタンをクリックする。ただし、この画面で何も入力しなくてもリスク評価はできる。

ChemSTEER 05/27/2004 Version

File Edit Preferences Reports Help

General Chemical Operations Operation Parameters Releases Exposures Optional Information

**Chemical**

Chemical Name:

Chemical Category:

Trade Name(s):

Chemical CAS Number:  Molecular Formula:

---

Total Assessed Production Volume (PV):  kg/yr

Imported Production Volume (PVi):  kg/yr

Domestic Production Volume (PVd):  kg/yr

Type of Notice:

---

Vapor Pressure (VPchem):  torr at  C

Molecular Weight (MW):  g/mol % < 500:  % < 1000:

Density (Dchem):  g/cm3 at  C

Solubility in Water (WSchem):  g/L at  C

---

General Description of End Use(s):

---

Parameters with red labeling are often important defaults used in mass balance, container, and model calculations.

4 「Chemical」 タブで「Update Chemical Information」 ボタンをクリックする。

**Update Chemical Information**

Update or add the chemical information below, then press OK to return to the Chemical window. Read the "Purpose and Use of the Chemical Tab" topic in the Help System for more information.

Chemical Name:

Chemical Category:

Trade Name(s):

Chemical CAS Number:  Molecular Formula:

Domestic Production Volume (PVd):  kg/yr

Imported Production Volume (PVi):  kg/yr

Total Assessed Production Volume (PV):  kg/yr

Type of Notice:  Manufacturing  Import

Vapor Pressure (VPchem):  torr at  C

Molecular Weight (MW):  g/mol % < 500:  % < 1000:

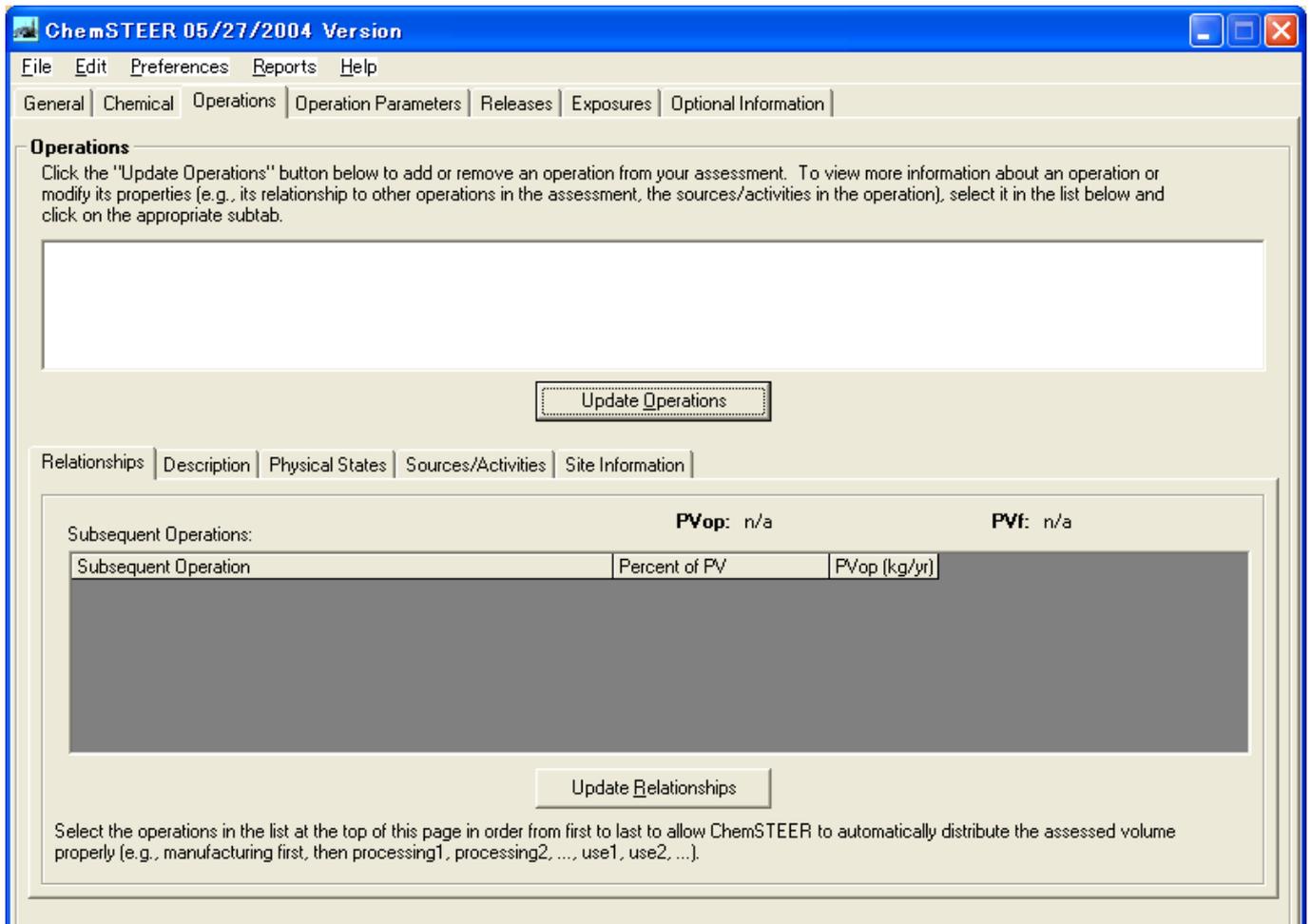
Density (Dchem):  g/cm<sup>3</sup> at  C

Solubility in Water (WSchem):   g/L at  C  Dispersible  Reacts

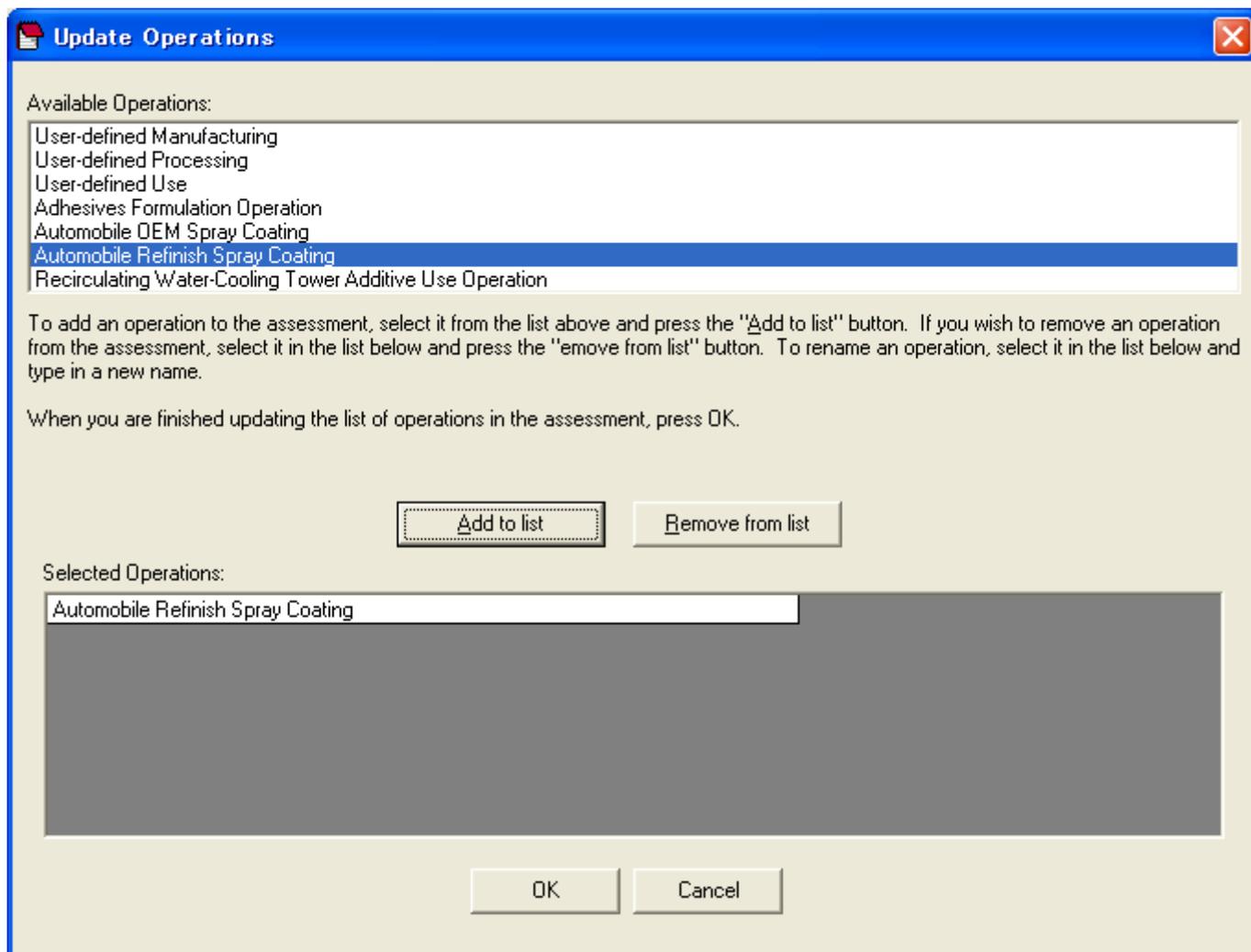
General Description of End Use(s):

OK Cancel

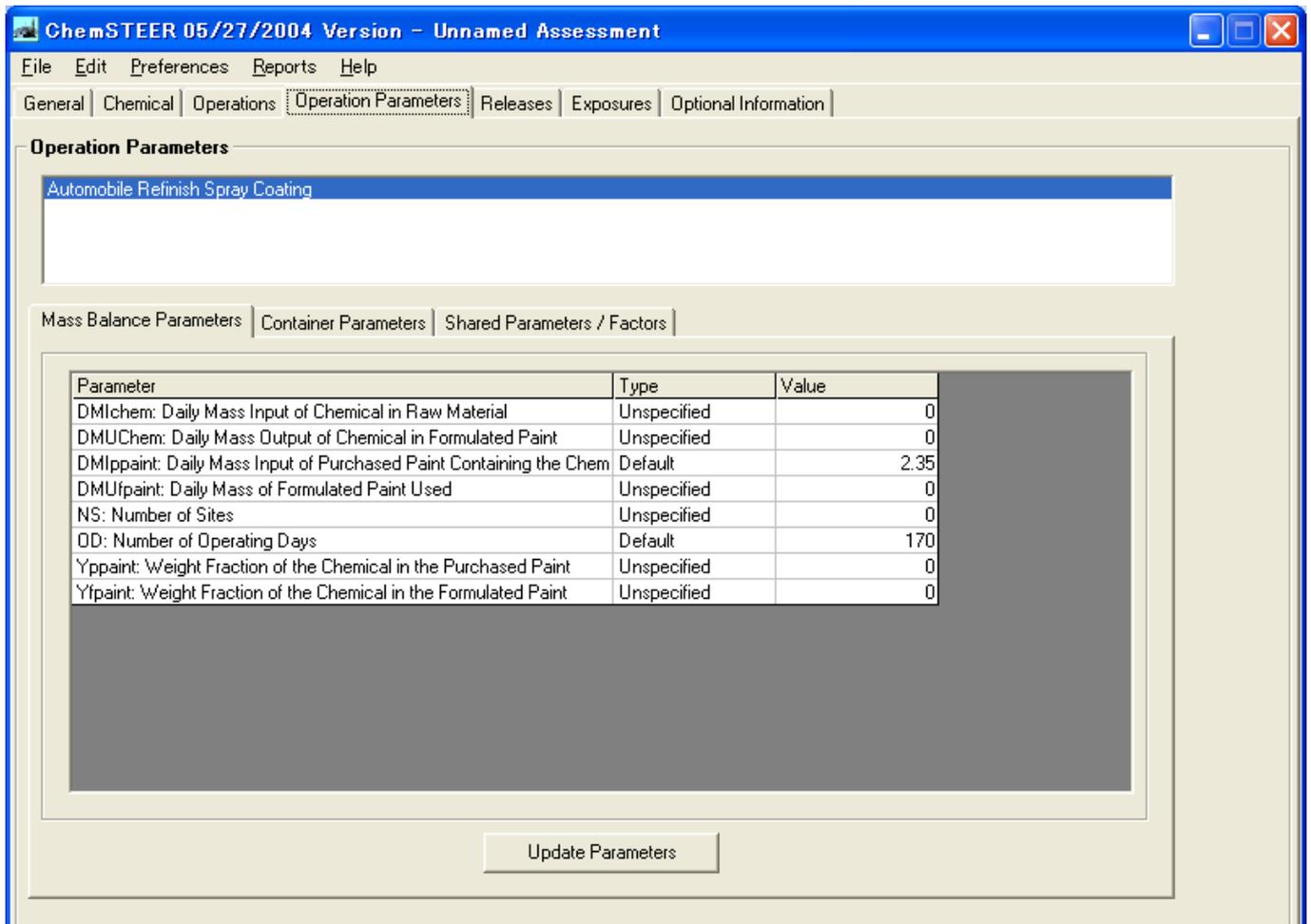
- 5 空欄に化学物質の情報を入力し、「OK」ボタンをクリックする。
- ・「Density」部分が入力されない状態だと次の段階でエラーになる。
  - ・ChemSTEERにおいて、「Total Assessed Production Volume(PV)」は排出と曝露を評価する上で、重要なパラメーターである。他の物理化学的なパラメーターは後に選択するモデルの種類によっては必要な場合もある。



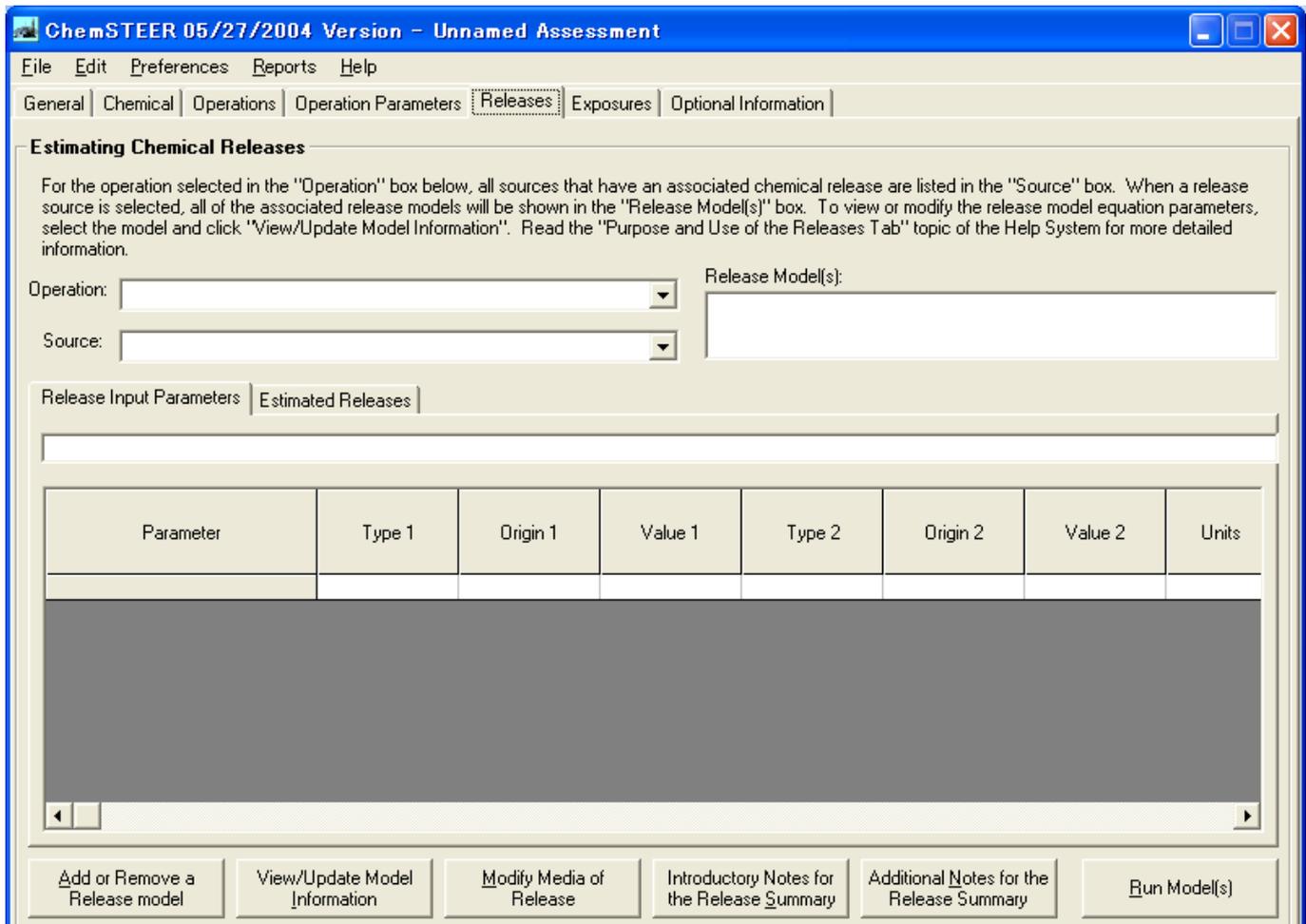
6 「Operations」 タブで「Update Operations」のボタンをクリックする。



7 「Available Operations」の項目からリスク評価をしたい工程を選択し、「Add to list」ボタンをクリックすると、工程が「Selected Operations」の欄に加えられる。工程が加えられたら「OK」ボタンをクリックする。



8 「Operation Parameters」をクリックする。「Mass Balance Parameters」、「Container Parameters」、「Shared Parameters/Factors」タブで、パラメーターの追加・変更ができるが、工程を選択した段階でデフォルト値がすでに入力されてあるはずなので、基本的には何もせず先に進んでよい。



9 「Releases」タブをクリックする。

ChemSTEER 05/27/2004 Version - Unnamed Assessment

File Edit Preferences Reports Help

General Chemical Operations Operation Parameters Releases Exposures Optional Information

### Estimating Chemical Releases

For the operation selected in the "Operation" box below, all sources that have an associated chemical release are listed in the "Source" box. When a release source is selected, all of the associated release models will be shown in the "Release Model(s)" box. To view or modify the release model equation parameters, select the model and click "View/Update Model Information". Read the "Purpose and Use of the Releases Tab" topic of the Help System for more detailed information.

Operation: Automobile Refinish Spray Coating

Source: Automotive Refinishing Spray Coating Application

Release Model(s): EPA/OPPT Automobile Refinish Coating Overspray Loss Model (non-vola

Release Input Parameters Estimated Releases

Model Status: Model never run

Parameter	Type Output 2	Origin Output 2	Value Output 2	Units
Amt: Amount to Use	Default	DMlchem	0	kg/site-day
Freq: Frequency to Use	Default	OD	170	days/site-yr
LF: Loss Fraction	Constant	Model Parm	0.75	dimensionles
McE: Spray Mist Capture	Default	Dry Filter	0.9	dimensionles
NS: Number of Sites	Default	Mass Parm	0	sites
SrE: Solid Removal Efficiency	Default	Dry Filter	1	dimensionles
TE: Spray Gun Transfer Efficiency	Default	Conv Gun	0.25	dimensionles

Add or Remove a Release model View/Update Model Information Modify Media of Release Introductory Notes for the Release Summary Additional Notes for the Release Summary Run Model(s)

10 「Operation」と「Source」の欄をクリックし選択すると、「Release Model」の欄に適用できるモデルが表示される。「Release Model」の欄にモデルが表示されない場合は「Add or Remove a Release model」をクリックしてモデルを追加することもできる。

11 「View/Update Model Information」ボタンをクリックする。

**View / Update Release Model Information**

Read-only and updateable information about the selected release model are shown below. Click on the associated Type column label for a parameter to change its value. When the Type is User-defined, you enter your value directly in the Value column. To calculate two sets of model results, enable the Model Parameters for the Output 1 option and the Model Parameters for the Output 2 option below. Note that Output 1 parameters are used to calculate the Output 1 model results and Output 2 parameters are used to calculate the Output 2 model results. Use care and consistency in entering the parameter values to ensure that they are used appropriately by the model equation(s).

Activity: Automotive Refinishing Spray Coating Application  
 Model: EPA/OPPT Automobile Refinish Coating Overspray Loss Model (non-volatiles)

Model: DR (kg/site-day) = LF × Amt  
 Equation: DR occurs over [Freq] days/year

Mechanism: Overspray of non-volatile chemical in paint during the application.

Enable Model Parameters for Output 1       Enable Model Parameters for Output 2

Output 1: [ ]      Output 2: [ ]

Basis: EPA/OPPT Automobile Refinish Coating Overspray Loss Model (non-volatiles).

Parameters:

Parameter	Type 2	Origin 2	Value 2	Units
Amt: Amount to Use	Default	DMIchem	0	kg/site-day
Freq: Frequency to Use	Default	OD	170	days/site-yr
LF: Loss Fraction	Constant	Model Parm	0.75	dimensionles
McE: Spray Mist Capture Efficiency	Default	Dry Filter	0.9	dimensionles
NS: Number of Sites	Default	Mass Parm	0	sites
StE: Solid Removal Efficiency from	Default	Dry Filter	1	dimensionles
TE: Spray Gun Transfer Efficiency	Default	Conv Gun	0.25	dimensionles

OK      Cancel

12 画面下半分の「Parameters」の欄の、ゼロになっているパラメーターをダブルクリックして情報を入力する。入力が終わったら「OK」をクリックする。

- ここで、パラメーターがゼロのまま先に進むと最終的に計算ができない。

ChemSTEER 05/27/2004 Version - Unnamed Assessment

File Edit Preferences Reports Help

General Chemical Operations Operation Parameters Releases Exposures Optional Information

### Estimating Chemical Releases

For the operation selected in the "Operation" box below, all sources that have an associated chemical release are listed in the "Source" box. When a release source is selected, all of the associated release models will be shown in the "Release Model(s)" box. To view or modify the release model equation parameters, select the model and click "View/Update Model Information". Read the "Purpose and Use of the Releases Tab" topic of the Help System for more detailed information.

Operation: Automobile Refinish Spray Coating

Source: Automotive Refinishing Spray Coating Application

Release Model(s): EPA/OPPT Automobile Refinish Coating Overspray Loss Model (non-vola

Release Input Parameters Estimated Releases

Model Status: Model never run

Parameter	Type Output 2	Origin Output 2	Value Output 2	Units
Amt: Amount to Use	Default	DMlchem	0	kg/site-day
Freq: Frequency to Use	Default	OD	170	days/site-yr
LF: Loss Fraction	Constant	Model Parm	0.75	dimensionles
McE: Spray Mist Capture	Default	Dry Filter	0.9	dimensionles
NS: Number of Sites	Default	Mass Parm	0	sites
SrE: Solid Removal Efficiency	Default	Dry Filter	1	dimensionles
TE: Spray Gun Transfer Efficiency	Default	Conv Gun	0.25	dimensionles

Add or Remove a Release model View/Update Model Information Modify Media of Release Introductory Notes for the Release Summary Additional Notes for the Release Summary Run Model(s)

13 「Modify Media of Release」 ボタンをクリックする。

**Update release media output specifications**

Verify or change the media for the estimated release below.

**Automobile Refinish Spray Coating**  
**Automotive Refinishing Spray Coating Application**

To (NPDES number if appropriate):

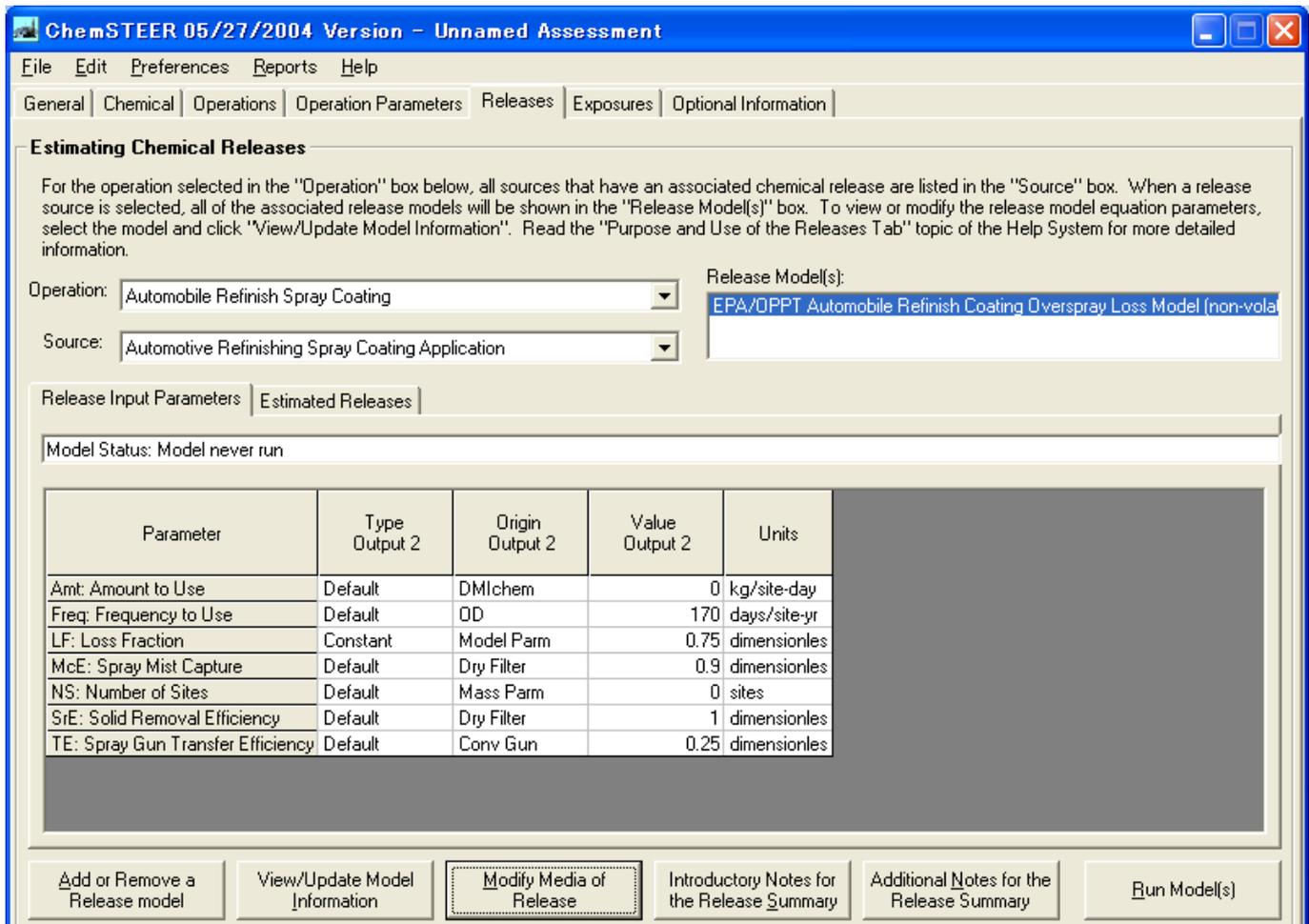
Basis: EPA/OPPT Automobile Refinish Coating Overspray Loss Model (non-volatiles).

---

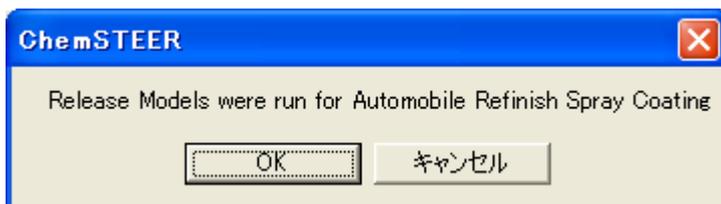
Water	<input type="text" value="0"/>	%						
Water or Air	<input type="text" value="0"/>	%	Air	<input type="text" value="10"/>	%			
Water or Air or Incineration	<input type="text" value="0"/>	%	Air or Incineration	<input type="text" value="0"/>	%			
Water or Air or Landfill	<input type="text" value="0"/>	%	Air or Incineration or Landfill	<input type="text" value="0"/>	%			
Water or Air or Incineration or Landfill	<input type="text" value="0"/>	%	Air or Landfill	<input type="text" value="0"/>	%			
Water or Incineration	<input type="text" value="0"/>	%	Incineration	<input type="text" value="0"/>	%	Deepwell Injection	<input type="text" value="0"/>	%
Water or Incineration or Landfill	<input type="text" value="0"/>	%	Incineration or Landfill	<input type="text" value="0"/>	%	Destroyed	<input type="text" value="0"/>	%
Water or Landfill	<input type="text" value="0"/>	%	Landfill	<input type="text" value="90"/>	%	Other	<input type="text" value="0"/>	%

Total: **100%**

14 放出先メディアの割合を設定できる。入力が終了したら「OK」をクリックする。



15 「Run Model」 ボタンをクリックする。



16 「OK」 ボタンをクリックする。

ChemSTEER 05/27/2004 Version - Unnamed Assessment

File Edit Preferences Reports Help

General Chemical Operations Operation Parameters Releases Exposures Optional Information

### Estimating Chemical Releases

For the operation selected in the "Operation" box below, all sources that have an associated chemical release are listed in the "Source" box. When a release source is selected, all of the associated release models will be shown in the "Release Model(s)" box. To view or modify the release model equation parameters, select the model and click "View/Update Model Information". Read the "Purpose and Use of the Releases Tab" topic of the Help System for more detailed information.

Operation: Automobile Refinish Spray Coating

Source: Automotive Refinishing Spray Coating Application

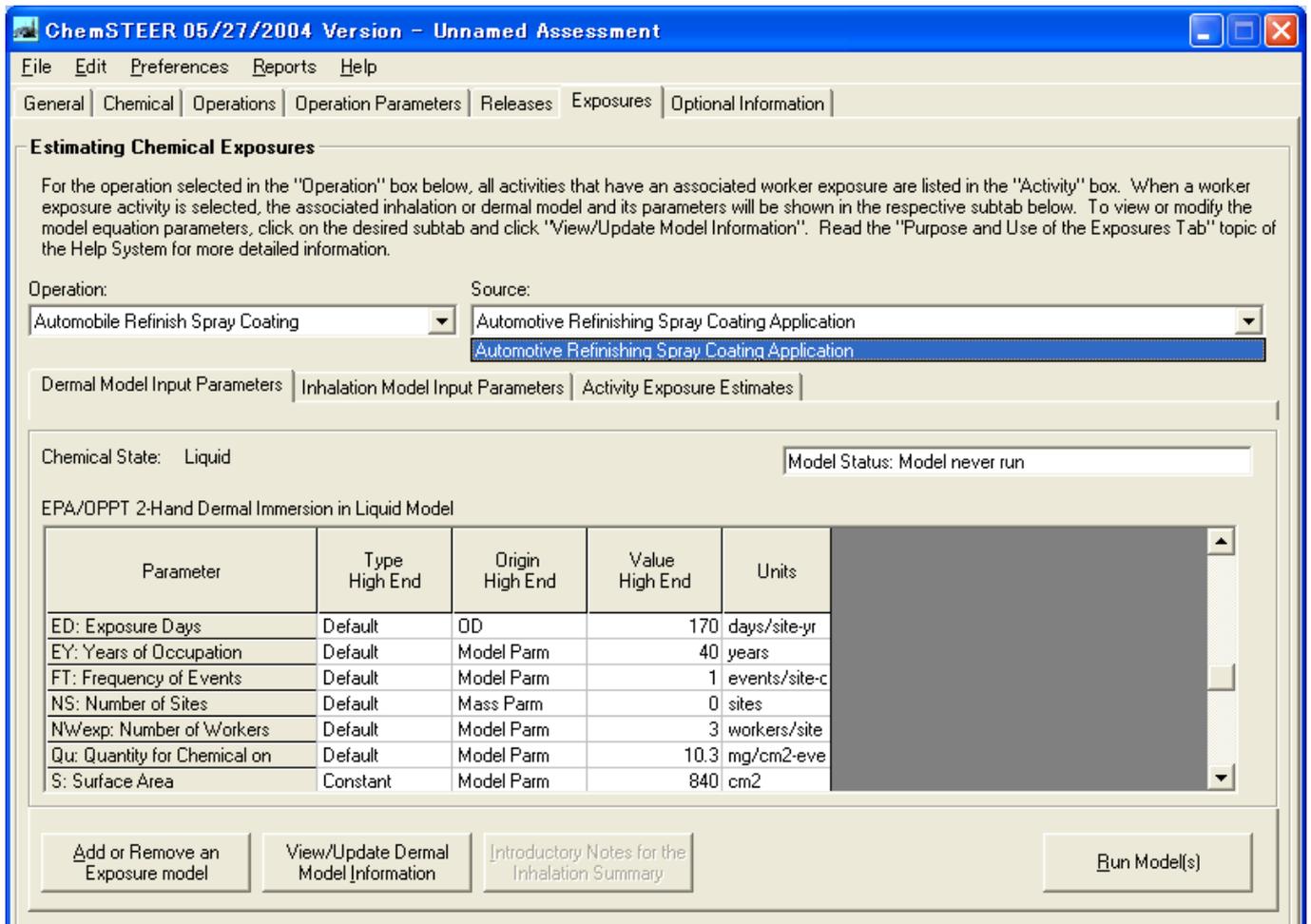
Release Model(s): EPA/OPPT Automobile Refinish Coating Overspray Loss Model (non-vola

Release Input Parameters: **Estimated Releases**

Media	Characterization of Results	Number of Sites	Days of Release (days/site-yr)	Daily Release Rate (kg/site-day)	Annual Release Rate (kg/yr-all sites)	Basis
Air	Average	2	170	1.5	510	EPA/OPPT
Landfill	Average	2	170	162	55,080	EPA/OPPT

Add or Remove a Release model View/Update Model Information Modify Media of Release Introductory Notes for the Release Summary Additional Notes for the Release Summary Run Model(s)

17 「Estimated Releases」タブに計算結果が算出されたことを確認したら、「Exposures」タブをクリックする。



18 「Releases」のタブで行ったことと同様に、「Operation」と「Source」の欄をクリックし選択すると、「Dermal Model Input Parameters」又は「Inhalation Model Input Parameters」タブパラメーターのデフォルト値が表示される。「Add or Remove an Exposure model」タブをクリックして使用するモデルを変更することもできる。

19 「View/Update Dermal Model Information」(または「View/Update Inhalation Model Information」)のボタンをクリックする。

**View / Update Exposure Model Information**

Read-only and updatable information about the selected exposure model are shown below. Click on the associated Type column label for a parameter to change it's value. When the Type is User-defined, you enter your value directly in the Value column. To calculate two sets of model results, enable the Model Parameters for Output 1 option and the Model Parameters for Output 2 option below. Note that Output 1 parameters are used to calculate the Output 1 model results and Output 2 parameters are used to calculate the Output 2 model results. Use care and consistency in entering the parameter values to ensure that they are used appropriately by the model equation(s).

Activity: Automotive Refinishing Spray Coating Application  
 Model: EPA/OPPT 2-Hand Dermal Immersion in Liquid Model

Model Equation:  $D_{exp} = S \times Q_u \times W_f \times FT$   
 $LADD = (D_{exp} \times ED \times Y) / (BW \times AT_c \times 365 \text{ days/yr})$

Mechanism: Dermal exposure to the chemical for 2-hand immersion in liquid containing the chemical.

Chemical State: Liquid

Enable Model Parameters for Output 1       Enable Model Parameters for Output 2

What-If: Output      High End

Basis: EPA/OPPT 2-Hand Dermal Immersion in Liquid Model.

Parameters:

Parameter	Type 2	Origin 2	Value 2	Units
ED: Exposure Days	Default	OD	170	days/site-yr
EY: Years of Occupation Exposure	Default	Model Parm	40	years
FT: Frequency of Events	Default	Model Parm	1	events/site-c
NS: Number of Sites	Default	Mass Parm	0	sites
NWexp: Number of Workers Expo	Default	Model Parm	3	workers/site
Qu: Quantity for Chemical on Skin	Non-default	Model Parm	10.3	mg/cm2-eve
S: Surface Area	Constant	Model Parm	840	cm2

OK      Cancel

20 「Parameters」の欄の、値がゼロになっているパラメーターをダブルクリックし、情報を入力する。入力が終了したら「OK」ボタンをクリックする。

- ここで、パラメーターがゼロのまま先に進むと最終的に計算ができない。

ChemSTEER 05/27/2004 Version - Unnamed Assessment

File Edit Preferences Reports Help

General Chemical Operations Operation Parameters Releases Exposures Optional Information

**Estimating Chemical Exposures**

For the operation selected in the "Operation" box below, all activities that have an associated worker exposure are listed in the "Activity" box. When a worker exposure activity is selected, the associated inhalation or dermal model and its parameters will be shown in the respective subtab below. To view or modify the model equation parameters, click on the desired subtab and click "View/Update Model Information". Read the "Purpose and Use of the Exposures Tab" topic of the Help System for more detailed information.

Operation: Automobile Refinish Spray Coating Source: Automotive Refinishing Spray Coating Application

Route of Exposure	Characterization of Results	Total Number of Workers	Exposure Days per Year	Potential Dose Rate (mg/day)	Lifetime Average Daily Dose (mg/kg-day)	Average Daily Dose (mg/kg-day)	Acute Potential Dose (mg/kg-day)	Basis
Inhalation	What-If	3	170	150	0.5703	0.998	2.1429	EPA/ OPPT Automobile
Dermal	High End	36	170	17,304	65.791	115.13	247.2	EPA/OPPT 2-Hand

- 21 「Run Model」 ボタンをクリックすると結果が「Activity Exposure Estimates」タブに計算結果が表示されたことを確認する。
- 22 次に、画面左上の File をクリックし、Save Assessment を選択することで結果を保存する。
- 23 保存ができたなら、Report をクリックし、View IRER Report を選択すれば、印刷用のレポートを見ることができる。

おわり