

**Modifications to User's Guide to the Complex Terrain  
Dispersion Model Plus Algorithms for Unstable  
Situations (CTDMPLUS):  
Volume 1. Model Description and User Instructions\*  
March 1993**

\* The complete User's Guide (EPA/600/8-89/041) was published in March 1989 and is available as Accession No. PB89-181424 from NTIS.

## Section 3.2 INPUT DATA REQUIREMENTS

1) Replace Table 3-3 with the following

TABLE 3-3. CONTENTS OF THE CTDM.IN FILE

Line group	Variable name	Columns	Format	Description
1	Title	1-80	A80	80-character header
2	ICASE	*	*	Case study printout option. 0 = No, 1 = Stable hours only, 2 = Unstable hours only, 3 = All hours
	ITOPN	*	*	Create a top 4 table at the end of the run. 0 = NO, 1 = YES
	ICONC	*	*	Concentration output file option. 0 = NO, 1 = BINARY, 2 = TEXT, 3 = TEXT with receptor information
	IMIX	*	*	0 = Use calculated mixing heights as first priority, 1 = Use observed mixing heights as first priority
	IWSI	*	*	Set minimum wind speed = 1.0 m/s. 0 = NO, 1 = YES
	ISIGV	*	*	Assume $\sigma_0$ input if 0; $\sigma_v$ input if 1
	IWD	*	*	Scale wind direction with height. 0 = NO, 1 = YES
	ICHIQ	*	*	0 = output concentrations ( $\mu\text{g}/\text{m}^3$ ) 1 = output ( $\mu\text{s}/\text{m}^3$ )
	ISOR	*	*	Source contribution file option 0 = NO, 1 = TEXT, 2 = BINARY
	IUNSTA	*	*	0 = Model only stable hours 1 = Model unstable hours (RAWIN file required) and stable hours
	ISTKTP	*	*	Set concentration to 0.0 for receptors below stack top 0 = NO, 1 = YES
3	HORIZ	*	*	Horizontal scale factor, converts user units to meters
	VERT	*	*	Vertical scale factor, converts user units to meters
	RLAT	*	*	Site latitude (degrees)
	RLON	*	*	Site longitude (degrees)
	TZONE	*	*	Site time zone (hours behind GMT)
	IPOL	*	*	Pollutant Code (1-4)
4	LABEL	1-20	A20	Meteorological tower name
	XT	21-30	F10.0	X-coordinate of tower (user horizontal units)
	YT	31-40	F10.0	Y-coordinate of tower (user horizontal units)
	ZT	41-50	F10.0	Z-coordinate (user vertical units) of tower base
5**	SNAME	1-16	A16	16 character source name
	XS	17-23	F7.0	X-coordinate of source, (user horizontal units)

	YS	24-30	F7.0	Y-coordinate of source (user horizontal units)
	ZS	31-37	F7.0	Source base elevation (user vertical units)
	HS	38-44	F7.0	Stack height (m)
	DS	45-51	F7.0	Stack diameter (m)
	TS***	52-58	F7.0	Stack gas temperature (K)
	VS***	59-65	F7.0	Stack gas exit velocity (m/s)
	QS***	66-72	F7.0	Emission rate (g/s)
	IQ	80	I1	Variable emission rate flag for this stack. 0 = constant, 1 = variable
6	ENDS	1-4	A4	'ENDS'--flag for end of source data
7	ZOH	*	*	Surface roughness length (m) for each hill in the order that the hills appear in the TERRAIN file.

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\*Free format

\*\*One line per source, maximum of 40 sources (maximum number can be changed)

\*\*\*These values are replaced if hourly emissions data are provided for this stack

2) In Section 3.2.1 , in the paragraph beginning "Point source information ..", change the last sentence to read "Up to 40 stacks can be input; this number can be altered by changing the code in the INCLUDE file PARAMS.INC."

3) In Table 3-5, change the second group of parameters in record group 3 from  
L  
to  
XHL, YHL

4) At the end of Table 3-5, change the third footnote from  
\*\*\*There is a maximum of 35 hills  
to  
\*\*\*There is a maximum of 25 hills

### Section 3.3 CTDMPLUS OUTPUT FILES

1) In the last paragraph of Section 3.3.1, omit references to the ISOR switch since this table is now written to a separate file instead of the CTDM.OUT file.

2) Add Section 3.3.3 as follows:

#### 3.3.3 Source contribution file

The user has the option of creating a file (SOURCES) containing source contribution information. The file can be written in text or binary format and contains the total concentration and contribution from each source for each receptor for each simulation.

### **Section 3.4 ADDITIONAL COMPUTER NOTES**

- 1) Add the following to the list of default input/output unit numbers  
"SOURCES" - unit 17
- 2) Change the last paragraph from  
These program halts may, in the future, be handled by having CTDMPLUS not predict concentrations for the hour affected (negative concentrations being produced). Until more ...  
to  
When these program halts occur, CTDMPLUS does not predict concentrations for that hour (concentrations are set to missing) and processing continues with the next hour.

### **Section 4.1 RECEPTOR GENERATOR**

- 1) The following describes the differences between the old receptor generator and the revised receptor generator (dated 93076).

When RECGEN starts, the user is given the option to create a new receptor file or edit an existing one. The process for creating a new receptor file is quite similar to the process described in Section 4.1. The main difference in the revised receptor generator (dated 93076) is that the receptors on each contour are displayed immediately after you select the receptor spacing. If you look at the receptor pattern for that contour and you don't like it, hit ESC. The receptors will disappear and the receptor spacing method menu will come back for you to try again. If you like the receptor pattern you see for a particular contour, hit ENTER to continue. NOTE: once you accept the pattern for a particular contour, you cannot go back. You can, however, edit the file later using RECGEN as described below.

To edit an existing receptor file choose the plot file of terrain contours (\*.PLT) and the receptor file (\*.RCT) from the menus provided. The terrain contours and receptors will be displayed on the screen. To display the help screen, press F1. To insert a receptor, move the cross hair to the desired position and press the INSERT key. You will be prompted for the ground elevation of the receptor. The receptor height above ground is set to 0.0 (receptors can not be placed on poles using RECGEN). Pressing F3 will display a list of the contour elevations. After you type in the elevation and press ENTER, the new receptor will be displayed and the receptor information will be added to the receptor file. If you wish to delete a receptor, move the cross hair close to the receptor to be deleted and press the DELETE key. The receptor closest to the cross hair will be marked (highlighted) and its coordinates will be displayed in the lower left corner of the screen. Press the DELETE key again to delete the receptor and remove it from the receptor file. Pressing any other key will cancel the delete. Press F8 when you are done editing and the changes will be saved to the file.

### **Section 5.2 USER INSTRUCTIONS**

- 1) In Table 5-1, under Main program add CTSCREEN to the bottom of the list.
- 2) In Table 5-1, under subprograms, delete CONTOUR and add CHIRET
- 3) In Table 5-2, add the following

FITCON contour ID file .CID  
Source contribution file SOURCES .SRC

and delete the Gridded data file (.GRD).

- 4) In Figure 5-1, add \*.CID to the list of files in the \CTDM\TERRAIN\ directory.
- 5) In Figure 5-1, add \*.SRC to the list of files in the \CTDM\FILES\ directory.
- 6) In Figure 5-2, add the option

5 - CTSCREEN