Annex 4B. Wastewater Treatment and Discharge (IPCC 4D)
to the Technical Support Document for California's Greenhouse Gas Emissions Inventory and the 1990 Emissions Level

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Variables Used in the Emissions Estimation Equations

Values last updated on Monday, November 19, 2007

IPCC category =4D1 — Wastewater Treatment and Discharge - Domestic Wastewater Treatment and Discharge

► ***Sector = Waste Water Treatment : Domestic Waste Water >***

Activity = California population

- Variable Name -	- Year -	- Value and Units -	- Reference -
California population	1990	29,828,000 person	CDOF, 2007a
California population	1991	30,458,000 person	CDOF, 2007a
California population	1992	30,987,000 person	CDOF, 2007a
California population	1993	31,314,000 person	CDOF, 2007a
California population	1994	31,523,000 person	CDOF, 2007a
California population	1995	31,711,000 person	CDOF, 2007a
California population	1996	31,962,000 person	CDOF, 2007a
California population	1997	32,452,000 person	CDOF, 2007a
California population	1998	32,862,000 person	CDOF, 2007a
California population	1999	33,417,000 person	CDOF, 2007a
California population	2000	33,872,000 person	CDOF, 2007a
California population	2001	34,735,000 person	CDOF, 2007a
California population	2002	34,488,000 person	CDOF, 2007a
California population	2003	35,159,000 person	CDOF, 2007a
California population	2004	35,394,000 person	CDOF, 2007a
BOD5 CH4 emission factor	1990	0.6 g / g	USEPA, 2007h
BOD5 CH4 emission factor	1991	0.6 g / g	USEPA, 2007h
BOD5 CH4 emission factor	1992	0.6 g / g	USEPA, 2007h
BOD5 CH4 emission factor	1993	0.6 g / g	USEPA, 2007h
BOD5 CH4 emission factor	1994	0.6 g / g	USEPA, 2007h
BOD5 CH4 emission factor	1995	0.6 g / g	USEPA, 2007h
BOD5 CH4 emission factor	1996	0.6 g / g	USEPA, 2007h
BOD5 CH4 emission factor	1997	0.6 g / g	USEPA, 2007h
BOD5 CH4 emission factor	1998	0.6 g / g	USEPA, 2007h
BOD5 CH4 emission factor	1999	0.6 g / g	USEPA, 2007h
BOD5 CH4 emission factor	2000	0.6 g / g	USEPA, 2007h
BOD5 CH4 emission factor	2001	0.6 g / g	USEPA, 2007h
BOD5 CH4 emission factor	2002	0.6 g / g	USEPA, 2007h
BOD5 CH4 emission factor	2003	0.6 g / g	USEPA, 2007h
BOD5 CH4 emission factor	2004	0.6 g / g	USEPA, 2007h
Effluent water emission factor	1990	5.000E-03 g / g	USEPA, 2007h
Effluent water emission factor	1991	5.000E-03 g / g	USEPA, 2007h
Effluent water emission factor	1992	5.000E-03 g / g	USEPA, 2007h
Effluent water emission factor	1993	5.000E-03 g / g	USEPA, 2007h
Effluent water emission factor	1994	5.000E-03 g / g	USEPA, 2007h
Effluent water emission factor	1995	5.000E-03 g / g	USEPA, 2007h
Effluent water emission factor	1996	5.000E-03 g / g	USEPA, 2007h
Effluent water emission factor	1997	5.000E-03 g / g	USEPA, 2007h
Effluent water emission factor	1998	5.000E-03 g / g	USEPA, 2007h
Effluent water emission factor	1999	5.000E-03 g / g	USEPA, 2007h
Effluent water emission factor	2000	5.000E-03 g / g	USEPA, 2007h
Effluent water emission factor	2001	5.000E-03 g / g	USEPA, 2007h
Effluent water emission factor	2002	5.000E-03 g / g	USEPA, 2007h
Effluent water emission factor	2003	5.000E-03 g / g	USEPA, 2007h
Effluent water emission factor	2004	5.000E-03 g / g	USEPA, 2007h

Fraction of nitrogen in protein	1990	0.16 g / g	USEPA, 2007h
Fraction of nitrogen in protein	1991	0.16 g / g	USEPA, 2007h
Fraction of nitrogen in protein	1992	0.16 g / g	USEPA, 2007h
Fraction of nitrogen in protein	1993	0.16 g / g	USEPA, 2007h
Fraction of nitrogen in protein	1994	0.16 g / g	USEPA, 2007h
Fraction of nitrogen in protein	1995	0.16 g / g	USEPA, 2007h
Fraction of nitrogen in protein	1996	0.16 g / g	USEPA, 2007h
Fraction of nitrogen in protein	1997	0.16 g / g	USEPA, 2007h
Fraction of nitrogen in protein	1998	0.16 g / g	USEPA, 2007h
Fraction of nitrogen in protein	1999	0.16 g / g	USEPA, 2007h
Fraction of nitrogen in protein	2000	0.16 g / g	USEPA, 2007h
Fraction of nitrogen in protein	2001	0.16 g / g	USEPA, 2007h
Fraction of nitrogen in protein	2002	0.16 g / g	USEPA, 2007h
Fraction of nitrogen in protein	2003	0.16 g / g	USEPA, 2007h
Fraction of nitrogen in protein	2004	0.16 g / g	USEPA, 2007h
Fraction using wastewater treatment plants	1990	0.75	USEPA, 2007h
Fraction using wastewater treatment plants	1991	0.75	USEPA, 2007h
Fraction using wastewater treatment plants	1992	0.75	USEPA, 2007h
Fraction using wastewater treatment plants	1993	0.75	USEPA, 2007h
Fraction using wastewater treatment plants	1994	0.75	USEPA, 2007h
Fraction using wastewater treatment plants	1995	0.75	USEPA, 2007h
Fraction using wastewater treatment plants	1996	0.75	USEPA, 2007h
Fraction using wastewater treatment plants	1997	0.75	USEPA, 2007h
Fraction using wastewater treatment plants	1998	0.75	USEPA, 2007h
Fraction using wastewater treatment plants	1999	0.75	USEPA, 2007h
Fraction using wastewater treatment plants	2000	0.75	USEPA, 2007h
Fraction using wastewater treatment plants	2001	0.75	USEPA, 2007h
Fraction using wastewater treatment plants	2002	0.75	USEPA, 2007h
Fraction using wastewater treatment plants	2003	0.75	USEPA, 2007h
Fraction using wastewater treatment plants	2004	0.75	USEPA, 2007h
Non-consumption protein factor	1990	1.75	USEPA, 2007h
Non-consumption protein factor	1991	1.75	USEPA, 2007h
Non-consumption protein factor	1992	1.75	USEPA, 2007h
Non-consumption protein factor	1993	1.75	USEPA, 2007h
Non-consumption protein factor	1994	1.75	USEPA, 2007h
Non-consumption protein factor	1995	1.75	USEPA, 2007h
Non-consumption protein factor	1996	1.75	USEPA, 2007h
Non-consumption protein factor	1997	1.75	USEPA, 2007h
Non-consumption protein factor	1998	1.75	USEPA, 2007h
Non-consumption protein factor	1999	1.75	USEPA, 2007h
Non-consumption protein factor	2000	1.75	USEPA, 2007h
Non-consumption protein factor	2001	1.75	USEPA, 2007h
Non-consumption protein factor	2002	1.75	USEPA, 2007h
Non-consumption protein factor	2003	1.75	USEPA, 2007h
Non-consumption protein factor	2004	1.75	USEPA, 2007h
Per Capita biological organic demand (BOD5)	1990	90 g / person / day	USEPA, 2007h
Per Capita biological organic demand (BOD5)	1991	90 g / person / day	USEPA, 2007h
Per Capita biological organic demand (BOD5)	1992	90 g / person / day	USEPA, 2007h
Per Capita biological organic demand (BOD5)	1993	90 g / person / day	USEPA, 2007h
Per Capita biological organic demand (BOD5)	1994	90 g / person / day	USEPA, 2007h
Per Capita biological organic demand (BOD5)	1995	90 g / person / day	USEPA, 2007h
Per Capita biological organic demand (BOD5)	1996	90 g / person / day	USEPA, 2007h
Per Capita biological organic demand (BOD5)	1997	90 g / person / day	USEPA, 2007h
Per Capita biological organic demand (BOD5)	1998	90 g / person / day	USEPA, 2007h
Per Capita biological organic demand (BOD5)	1999	90 g / person / day	USEPA, 2007h

Per Capita biological organic demand (BOD5)	2000	90 g / person / day	USEPA, 2007h
Per Capita biological organic demand (BOD5)	2001	90 g / person / day	USEPA, 2007h
Per Capita biological organic demand (BOD5)	2002	90 g / person / day	USEPA, 2007h
Per Capita biological organic demand (BOD5)	2003	90 g / person / day	USEPA, 2007h
Per Capita biological organic demand (BOD5)	2004	90 g / person / day	USEPA, 2007h
Proportion of BOD5 anaerobically digested	1990	0.163	USEPA, 2007h
Proportion of BOD5 anaerobically digested	1991	0.163	USEPA, 2007h
Proportion of BOD5 anaerobically digested	1992	0.163	USEPA, 2007h
Proportion of BOD5 anaerobically digested	1993	0.163	USEPA, 2007h
Proportion of BOD5 anaerobically digested	1994	0.163	USEPA, 2007h
Proportion of BOD5 anaerobically digested	1995	0.163	USEPA, 2007h
Proportion of BOD5 anaerobically digested	1996	0.163	USEPA, 2007h
Proportion of BOD5 anaerobically digested	1997	0.163	USEPA, 2007h
Proportion of BOD5 anaerobically digested	1998	0.163	USEPA, 2007h
Proportion of BOD5 anaerobically digested	1999	0.163	USEPA, 2007h
Proportion of BOD5 anaerobically digested	2000	0.163	USEPA, 2007h
Proportion of BOD5 anaerobically digested	2001	0.163	USEPA, 2007h
Proportion of BOD5 anaerobically digested	2002	0.163	USEPA, 2007h
Proportion of BOD5 anaerobically digested	2003	0.163	USEPA, 2007h
Proportion of BOD5 anaerobically digested	2004	0.163	USEPA, 2007h
Protein consumption rate	1990	39,237 g / person	USEPA, 2007h
Protein consumption rate	1991	39,821 g / person	USEPA, 2007h
Protein consumption rate	1992	39,967 g / person	USEPA, 2007h
Protein consumption rate	1993	40,150 g / person	USEPA, 2007h
Protein consumption rate	1994	41,135 g / person	USEPA, 2007h
Protein consumption rate	1995	40,551 g / person	USEPA, 2007h
Protein consumption rate	1996	40,661 g / person	USEPA, 2007h
Protein consumption rate	1997	40,916 g / person	USEPA, 2007h
Protein consumption rate	1998	41,208 g / person	USEPA, 2007h
Protein consumption rate	1999	42,048 g / person	USEPA, 2007h
Protein consumption rate	2000	41,938 g / person	USEPA, 2007h
Protein consumption rate	2001	41,792 g / person	USEPA, 2007h
Protein consumption rate	2002	41,610 g / person	USEPA, 2007h
Protein consumption rate	2003	41,792 g / person	USEPA, 2007h
Protein consumption rate	2004	41,975 g / person	USEPA, 2007h
Sewage sludge N not entering aquatic environment	1990	0 g	See technical document text
Sewage sludge N not entering aquatic environment	1991	18 Mg (tonnes)	See technical document text
Sewage sludge N not entering aquatic environment	1992	26 Mg (tonnes)	See technical document text
Sewage sludge N not entering aquatic environment	1993	13 Mg (tonnes)	See technical document text
Sewage sludge N not entering aquatic environment	1994	36 Mg (tonnes)	See technical document text
Sewage sludge N not entering aquatic environment	1995	32 Mg (tonnes)	See technical document text
Sewage sludge N not entering aquatic environment	1996	27 Mg (tonnes)	See technical document text
Sewage sludge N not entering aquatic environment	1997	11 Mg (tonnes)	See technical document text
Sewage sludge N not entering aquatic environment	1998	9 Mg (tonnes)	See technical document text
Sewage sludge N not entering aquatic environment	1999	10 Mg (tonnes)	See technical document text
Sewage sludge N not entering aquatic environment	2000	73 Mg (tonnes)	See technical document text
Sewage sludge N not entering aquatic environment	2001	23 Mg (tonnes)	See technical document text
Sewage sludge N not entering aquatic environment	2002	35 Mg (tonnes)	See technical document text
Sewage sludge N not entering aquatic environment	2003	47 Mg (tonnes)	See technical document text
Sewage sludge N not entering aquatic environment	2004	18 Mg (tonnes)	See technical document text
Wastewater treatment plants emission factor	1990	4 g / person	USEPA, 2007h
Wastewater treatment plants emission factor	1991	4 g / person	USEPA, 2007h
Wastewater treatment plants emission factor	1992	4 g / person	USEPA, 2007h
Wastewater treatment plants emission factor	1993	4 g / person	USEPA, 2007h
Wastewater treatment plants emission factor	1994	4 g / person	USEPA, 2007h

Wastewater treatment plants emission factor	1995	4 g / person	USEPA, 2007h
Wastewater treatment plants emission factor	1996	4 g / person	USEPA, 2007h
Wastewater treatment plants emission factor	1997	4 g / person	USEPA, 2007h
Wastewater treatment plants emission factor	1998	4 g / person	USEPA, 2007h
Wastewater treatment plants emission factor	1999	4 g / person	USEPA, 2007h
Wastewater treatment plants emission factor	2000	4 g / person	USEPA, 2007h
Wastewater treatment plants emission factor	2001	4 g / person	USEPA, 2007h
Wastewater treatment plants emission factor	2002	4 g / person	USEPA, 2007h
Wastewater treatment plants emission factor	2003	4 g / person	USEPA, 2007h
Wastewater treatment plants emission factor	2004	4 g / person	USEPA, 2007h

IPCC category =4D2 — Wastewater Treatment and Discharge - Industrial Wastewater Treatment and Discharge

► *Sector = Manufacturing : Wastewater Treatment : Fugitives >*

Activity = Fugitive emissions

- Variable Name -	- Year -	- Value and Units -	- Reference -
Fugitive emissions	1990	Not used in estimates	None, see text
Fugitive emissions	1991	Not used in estimates	None, see text
Fugitive emissions	1992	Not used in estimates	None, see text
Fugitive emissions	1993	Not used in estimates	None, see text
Fugitive emissions	1994	Not used in estimates	None, see text
Fugitive emissions	1995	Not used in estimates	None, see text
Fugitive emissions	1996	Not used in estimates	None, see text
Fugitive emissions	1997	Not used in estimates	None, see text
Fugitive emissions	1998	Not used in estimates	None, see text
Fugitive emissions	1999	Not used in estimates	None, see text
Fugitive emissions	2000	Not used in estimates	None, see text
Fugitive emissions	2001	Not used in estimates	None, see text
Fugitive emissions	2002	Not used in estimates	None, see text
Fugitive emissions	2003	Not used in estimates	None, see text
Fugitive emissions	2004	Not used in estimates	None, see text

► *Sector = Oil & Gas Extraction : Wastewater Treatment : Fugitives >*

Activity = Fugitive emissions

- Variable Name -	- Year -	- Value and Units -	- Reference -
Fugitive emissions	1990	Not used in estimates	None, see text
Fugitive emissions	1991	Not used in estimates	None, see text
Fugitive emissions	1992	Not used in estimates	None, see text
Fugitive emissions	1993	Not used in estimates	None, see text
Fugitive emissions	1994	Not used in estimates	None, see text
Fugitive emissions	1995	Not used in estimates	None, see text
Fugitive emissions	1996	Not used in estimates	None, see text
Fugitive emissions	1997	Not used in estimates	None, see text
Fugitive emissions	1998	Not used in estimates	None, see text
Fugitive emissions	1999	Not used in estimates	None, see text
Fugitive emissions	2000	Not used in estimates	None, see text
Fugitive emissions	2001	Not used in estimates	None, see text
Fugitive emissions	2002	Not used in estimates	None, see text
Fugitive emissions	2003	Not used in estimates	None, see text
Fugitive emissions	2004	Not used in estimates	None, see text

► *Sector = Petroleum Marketing : Wastewater Treatment : Fugitives >*

Activity = Fugitive emissions

- Variable Name -	- Year -	- Value and Units -	- Reference -
Fugitive emissions	1990	Not used in estimates	None, see text

Fugitive emissions	1991	Not used in estimates	None, see text
Fugitive emissions	1992	Not used in estimates	None, see text
Fugitive emissions	1993	Not used in estimates	None, see text
Fugitive emissions	1994	Not used in estimates	None, see text
Fugitive emissions	1995	Not used in estimates	None, see text
Fugitive emissions	1996	Not used in estimates	None, see text
Fugitive emissions	1997	Not used in estimates	None, see text
Fugitive emissions	1998	Not used in estimates	None, see text
Fugitive emissions	1999	Not used in estimates	None, see text
Fugitive emissions	2000	Not used in estimates	None, see text
Fugitive emissions	2001	Not used in estimates	None, see text
Fugitive emissions	2002	Not used in estimates	None, see text
Fugitive emissions	2003	Not used in estimates	None, see text
Fugitive emissions	2004	Not used in estimates	None, see text

► *Sector = Petroleum Refining : Wastewater Treatment : Fugitives >*

Activity = Fugitive emissions

- Variable Name -	- Year -	- Value and Units -	- Reference -
Fugitive emissions	1990	Not used in estimates	None, see text
Fugitive emissions	1991	Not used in estimates	None, see text
Fugitive emissions	1992	Not used in estimates	None, see text
Fugitive emissions	1993	Not used in estimates	None, see text
Fugitive emissions	1994	Not used in estimates	None, see text
Fugitive emissions	1995	Not used in estimates	None, see text
Fugitive emissions	1996	Not used in estimates	None, see text
Fugitive emissions	1997	Not used in estimates	None, see text
Fugitive emissions	1998	Not used in estimates	None, see text
Fugitive emissions	1999	Not used in estimates	None, see text
Fugitive emissions	2000	Not used in estimates	None, see text
Fugitive emissions	2001	Not used in estimates	None, see text
Fugitive emissions	2002	Not used in estimates	None, see text
Fugitive emissions	2003	Not used in estimates	None, see text
Fugitive emissions	2004	Not used in estimates	None, see text

► *Sector = Waste Water Treatment : Industrial Waste Water >*

Activity = Production processed - Fruit and vegetables

- Variable Name -	- Year -	- Value and Units -	- Reference -
Production processed - Fruit and vegetables	1990	30.26 Tg (million tonnes)	USDA, 2007a
Production processed - Fruit and vegetables	1991	29.05 Tg (million tonnes)	USDA, 2007a
Production processed - Fruit and vegetables	1992	28.45 Tg (million tonnes)	USDA, 2007a
Production processed - Fruit and vegetables	1993	31.16 Tg (million tonnes)	USDA, 2007a
Production processed - Fruit and vegetables	1994	34.24 Tg (million tonnes)	USDA, 2007a
Production processed - Fruit and vegetables	1995	31.77 Tg (million tonnes)	USDA, 2007a
Production processed - Fruit and vegetables	1996	34.01 Tg (million tonnes)	USDA, 2007a
Production processed - Fruit and vegetables	1997	34.22 Tg (million tonnes)	USDA, 2007a
Production processed - Fruit and vegetables	1998	31.91 Tg (million tonnes)	USDA, 2007a
Production processed - Fruit and vegetables	1999	35.77 Tg (million tonnes)	USDA, 2007a
Production processed - Fruit and vegetables	2000	36.79 Tg (million tonnes)	USDA, 2007a
Production processed - Fruit and vegetables	2001	33.48 Tg (million tonnes)	USDA, 2007a
Production processed - Fruit and vegetables	2002	38.67 Tg (million tonnes)	USDA, 2007a
Production processed - Fruit and vegetables	2003	34.78 Tg (million tonnes)	USDA, 2007a
Production processed - Fruit and vegetables	2004	36.12 Tg (million tonnes)	USDA, 2007a
Chemical oxygen demand (COD)	1990	5 g / l	USEPA, 2007h
Chemical oxygen demand (COD)	1991	5 g / l	USEPA, 2007h
Chemical oxygen demand (COD)	1992	5 g / l	USEPA, 2007h

Chemical oxygen demand (COD)	1993	5 g / l	USEPA, 2007h
Chemical oxygen demand (COD)	1994	5 g / l	USEPA, 2007h
Chemical oxygen demand (COD)	1995	5 g / l	USEPA, 2007h
Chemical oxygen demand (COD)	1996	5 g / l	USEPA, 2007h
Chemical oxygen demand (COD)	1997	5 g / l	USEPA, 2007h
Chemical oxygen demand (COD)	1998	5 g / l	USEPA, 2007h
Chemical oxygen demand (COD)	1999	5 g / l	USEPA, 2007h
Chemical oxygen demand (COD)	2000	5 g / l	USEPA, 2007h
Chemical oxygen demand (COD)	2001	5 g / l	USEPA, 2007h
Chemical oxygen demand (COD)	2002	5 g / l	USEPA, 2007h
Chemical oxygen demand (COD)	2003	5 g / l	USEPA, 2007h
Chemical oxygen demand (COD)	2004	5 g / l	USEPA, 2007h
COD CH4 emission factor	1990	0.25 g / g	USEPA, 2007h
COD CH4 emission factor	1991	0.25 g / g	USEPA, 2007h
COD CH4 emission factor	1992	0.25 g / g	USEPA, 2007h
COD CH4 emission factor	1993	0.25 g / g	USEPA, 2007h
COD CH4 emission factor	1994	0.25 g / g	USEPA, 2007h
COD CH4 emission factor	1995	0.25 g / g	USEPA, 2007h
COD CH4 emission factor	1996	0.25 g / g	USEPA, 2007h
COD CH4 emission factor	1997	0.25 g / g	USEPA, 2007h
COD CH4 emission factor	1998	0.25 g / g	USEPA, 2007h
COD CH4 emission factor	1999	0.25 g / g	USEPA, 2007h
COD CH4 emission factor	2000	0.25 g / g	USEPA, 2007h
COD CH4 emission factor	2001	0.25 g / g	USEPA, 2007h
COD CH4 emission factor	2002	0.25 g / g	USEPA, 2007h
COD CH4 emission factor	2003	0.25 g / g	USEPA, 2007h
COD CH4 emission factor	2004	0.25 g / g	USEPA, 2007h
Proportion of COD degraded anaerobically	1990	0.05	USEPA, 2007h
Proportion of COD degraded anaerobically	1991	0.05	USEPA, 2007h
Proportion of COD degraded anaerobically	1992	0.05	USEPA, 2007h
Proportion of COD degraded anaerobically	1993	0.05	USEPA, 2007h
Proportion of COD degraded anaerobically	1994	0.05	USEPA, 2007h
Proportion of COD degraded anaerobically	1995	0.05	USEPA, 2007h
Proportion of COD degraded anaerobically	1996	0.05	USEPA, 2007h
Proportion of COD degraded anaerobically	1997	0.05	USEPA, 2007h
Proportion of COD degraded anaerobically	1998	0.05	USEPA, 2007h
Proportion of COD degraded anaerobically	1999	0.05	USEPA, 2007h
Proportion of COD degraded anaerobically	2000	0.05	USEPA, 2007h
Proportion of COD degraded anaerobically	2001	0.05	USEPA, 2007h
Proportion of COD degraded anaerobically	2002	0.05	USEPA, 2007h
Proportion of COD degraded anaerobically	2003	0.05	USEPA, 2007h
Proportion of COD degraded anaerobically	2004	0.05	USEPA, 2007h
Wastewater outflow	1990	5.600E-03 l / g	USEPA, 2007h
Wastewater outflow	1991	5.600E-03 l / g	USEPA, 2007h
Wastewater outflow	1992	5.600E-03 l / g	USEPA, 2007h
Wastewater outflow	1993	5.600E-03 l / g	USEPA, 2007h
Wastewater outflow	1994	5.600E-03 l / g	USEPA, 2007h
Wastewater outflow	1995	5.600E-03 l / g	USEPA, 2007h
Wastewater outflow	1996	5.600E-03 l / g	USEPA, 2007h
Wastewater outflow	1997	5.600E-03 l / g	USEPA, 2007h
Wastewater outflow	1998	5.600E-03 l / g	USEPA, 2007h
Wastewater outflow	1999	5.600E-03 l / g	USEPA, 2007h
Wastewater outflow	2000	5.600E-03 l / g	USEPA, 2007h
Wastewater outflow	2001	5.600E-03 l / g	USEPA, 2007h
Wastewater outflow	2002	5.600E-03 l / g	USEPA, 2007h
Wastewater outflow	2003	5.600E-03 l / g	USEPA, 2007h

Wastewater outflow	2004	5.600E-03 l / g	USEPA, 2007h

Activity = Production processed - Poultry

- Variable Name -	- Year -	- Value and Units -	- Reference -
Production processed - Poultry	1990	191.69 Gg (thousand tonnes)	USDA, 2007a
Production processed - Poultry	1991	182.61 Gg (thousand tonnes)	USDA, 2007a
Production processed - Poultry	1992	169.47 Gg (thousand tonnes)	USDA, 2007a
Production processed - Poultry	1993	150.53 Gg (thousand tonnes)	USDA, 2007a
Production processed - Poultry	1994	147.26 Gg (thousand tonnes)	USDA, 2007a
Production processed - Poultry	1995	146.78 Gg (thousand tonnes)	USDA, 2007a
Production processed - Poultry	1996	146.61 Gg (thousand tonnes)	USDA, 2007a
Production processed - Poultry	1997	143.54 Gg (thousand tonnes)	USDA, 2007a
Production processed - Poultry	1998	136.86 Gg (thousand tonnes)	USDA, 2007a
Production processed - Poultry	1999	134.74 Gg (thousand tonnes)	USDA, 2007a
Production processed - Poultry	2000	204.81 Gg (thousand tonnes)	USDA, 2007a
Production processed - Poultry	2001	209.57 Gg (thousand tonnes)	USDA, 2007a
Production processed - Poultry	2002	202.77 Gg (thousand tonnes)	USDA, 2007a
Production processed - Poultry	2003	194.06 Gg (thousand tonnes)	USDA, 2007a
Production processed - Poultry	2004	194.06 Gg (thousand tonnes)	USDA, 2007a
Chemical oxygen demand (COD)	1990	4.1 g / l	USEPA, 2007h
Chemical oxygen demand (COD)	1991	4.1 g / l	USEPA, 2007h
Chemical oxygen demand (COD)	1992	4.1 g / l	USEPA, 2007h
Chemical oxygen demand (COD)	1993	4.1 g / l	USEPA, 2007h
Chemical oxygen demand (COD)	1994	4.1 g / l	USEPA, 2007h
Chemical oxygen demand (COD)	1995	4.1 g / l	USEPA, 2007h
Chemical oxygen demand (COD)	1996	4.1 g / l	USEPA, 2007h
Chemical oxygen demand (COD)	1997	4.1 g / l	USEPA, 2007h
Chemical oxygen demand (COD)	1998	4.1 g / l	USEPA, 2007h
Chemical oxygen demand (COD)	1999	4.1 g / l	USEPA, 2007h
Chemical oxygen demand (COD)	2000	4.1 g / l	USEPA, 2007h
Chemical oxygen demand (COD)	2001	4.1 g / l	USEPA, 2007h
Chemical oxygen demand (COD)	2002	4.1 g / l	USEPA, 2007h
Chemical oxygen demand (COD)	2003	4.1 g / l	USEPA, 2007h
Chemical oxygen demand (COD)	2004	4.1 g / l	USEPA, 2007h
COD CH4 emission factor	1990	0.6 g / g	USEPA, 2007h
COD CH4 emission factor	1991	0.6 g / g	USEPA, 2007h
COD CH4 emission factor	1992	0.6 g / g	USEPA, 2007h
COD CH4 emission factor	1993	0.6 g / g	USEPA, 2007h
COD CH4 emission factor	1994	0.6 g / g	USEPA, 2007h
COD CH4 emission factor	1995	0.6 g / g	USEPA, 2007h
COD CH4 emission factor	1996	0.6 g / g	USEPA, 2007h
COD CH4 emission factor	1997	0.6 g / g	USEPA, 2007h
COD CH4 emission factor	1998	0.6 g / g	USEPA, 2007h
COD CH4 emission factor	1999	0.6 g / g	USEPA, 2007h
COD CH4 emission factor	2000	0.6 g / g	USEPA, 2007h
COD CH4 emission factor	2001	0.6 g / g	USEPA, 2007h
COD CH4 emission factor	2002	0.6 g / g	USEPA, 2007h
COD CH4 emission factor	2003	0.6 g / g	USEPA, 2007h
COD CH4 emission factor	2004	0.6 g / g	USEPA, 2007h
Proportion of COD degraded anaerobically	1990	0.25	USEPA, 2007h
Proportion of COD degraded anaerobically	1991	0.25	USEPA, 2007h
Proportion of COD degraded anaerobically	1992	0.25	USEPA, 2007h
Proportion of COD degraded anaerobically	1993	0.25	USEPA, 2007h
Proportion of COD degraded anaerobically	1994	0.25	USEPA, 2007h
Proportion of COD degraded anaerobically	1995	0.25	USEPA, 2007h
Proportion of COD degraded anaerobically	1996	0.25	USEPA, 2007h

Proportion of COD degraded anaerobically	1997	0.25	USEPA, 2007h
Proportion of COD degraded anaerobically	1998	0.25	USEPA, 2007h
Proportion of COD degraded anaerobically	1999	0.25	USEPA, 2007h
Proportion of COD degraded anaerobically	2000	0.25	USEPA, 2007h
Proportion of COD degraded anaerobically	2001	0.25	USEPA, 2007h
Proportion of COD degraded anaerobically	2002	0.25	USEPA, 2007h
Proportion of COD degraded anaerobically	2003	0.25	USEPA, 2007h
Proportion of COD degraded anaerobically	2004	0.25	USEPA, 2007h
Wastewater outflow	1990	0.017 l / g	USEPA, 2007h
Wastewater outflow	1991	0.017 l / g	USEPA, 2007h
Wastewater outflow	1992	0.017 l / g	USEPA, 2007h
Wastewater outflow	1993	0.017 l / g	USEPA, 2007h
Wastewater outflow	1994	0.017 l / g	USEPA, 2007h
Wastewater outflow	1995	0.017 l / g	USEPA, 2007h
Wastewater outflow	1996	0.017 l / g	USEPA, 2007h
Wastewater outflow	1997	0.017 l / g	USEPA, 2007h
Wastewater outflow	1998	0.017 l / g	USEPA, 2007h
Wastewater outflow	1999	0.017 l / g	USEPA, 2007h
Wastewater outflow	2000	0.017 l / g	USEPA, 2007h
Wastewater outflow	2001	0.017 l / g	USEPA, 2007h
Wastewater outflow	2002	0.017 l / g	USEPA, 2007h
Wastewater outflow	2003	0.017 l / g	USEPA, 2007h
Wastewater outflow	2004	0.017 l / g	USEPA, 2007h

Activity = Production processed - Red meat

- Variable Name -	- Year -	- Value and Units -	- Reference -
Production processed - Red meat	1990	505.8 Gg (thousand tonnes)	USDA, 2007a
Production processed - Red meat	1991	481.37 Gg (thousand tonnes)	USDA, 2007a
Production processed - Red meat	1992	426.96 Gg (thousand tonnes)	USDA, 2007a
Production processed - Red meat	1993	410 Gg (thousand tonnes)	USDA, 2007a
Production processed - Red meat	1994	430.97 Gg (thousand tonnes)	USDA, 2007a
Production processed - Red meat	1995	469.35 Gg (thousand tonnes)	USDA, 2007a
Production processed - Red meat	1996	473.4 Gg (thousand tonnes)	USDA, 2007a
Production processed - Red meat	1997	466.29 Gg (thousand tonnes)	USDA, 2007a
Production processed - Red meat	1998	469.44 Gg (thousand tonnes)	USDA, 2007a
Production processed - Red meat	1999	477.14 Gg (thousand tonnes)	USDA, 2007a
Production processed - Red meat	2000	483.44 Gg (thousand tonnes)	USDA, 2007a
Production processed - Red meat	2001	509.36 Gg (thousand tonnes)	USDA, 2007a
Production processed - Red meat	2002	608.85 Gg (thousand tonnes)	USDA, 2007a
Production processed - Red meat	2003	642.51 Gg (thousand tonnes)	USDA, 2007a
Production processed - Red meat	2004	643.01 Gg (thousand tonnes)	USDA, 2007a
Chemical oxygen demand (COD)	1990	4.1 g / l	USEPA, 2007h
Chemical oxygen demand (COD)	1991	4.1 g / l	USEPA, 2007h
Chemical oxygen demand (COD)	1992	4.1 g / l	USEPA, 2007h
Chemical oxygen demand (COD)	1993	4.1 g / l	USEPA, 2007h
Chemical oxygen demand (COD)	1994	4.1 g / l	USEPA, 2007h
Chemical oxygen demand (COD)	1995	4.1 g / l	USEPA, 2007h
Chemical oxygen demand (COD)	1996	4.1 g / l	USEPA, 2007h
Chemical oxygen demand (COD)	1997	4.1 g / l	USEPA, 2007h
Chemical oxygen demand (COD)	1998	4.1 g / l	USEPA, 2007h
Chemical oxygen demand (COD)	1999	4.1 g / l	USEPA, 2007h
Chemical oxygen demand (COD)	2000	4.1 g / l	USEPA, 2007h
Chemical oxygen demand (COD)	2001	4.1 g / l	USEPA, 2007h
Chemical oxygen demand (COD)	2002	4.1 g / l	USEPA, 2007h
Chemical oxygen demand (COD)	2003	4.1 g / l	USEPA, 2007h
Chemical oxygen demand (COD)	2004	4.1 g / l	USEPA, 2007h

COD CH4 emission factor	1990	0.6 g / g	USEPA, 2007h
COD CH4 emission factor	1991	0.6 g / g	USEPA, 2007h
COD CH4 emission factor	1992	0.6 g / g	USEPA, 2007h
COD CH4 emission factor	1993	0.6 g / g	USEPA, 2007h
COD CH4 emission factor	1994	0.6 g / g	USEPA, 2007h
COD CH4 emission factor	1995	0.6 g / g	USEPA, 2007h
COD CH4 emission factor	1996	0.6 g / g	USEPA, 2007h
COD CH4 emission factor	1997	0.6 g / g	USEPA, 2007h
COD CH4 emission factor	1998	0.6 g / g	USEPA, 2007h
COD CH4 emission factor	1999	0.6 g / g	USEPA, 2007h
COD CH4 emission factor	2000	0.6 g / g	USEPA, 2007h
COD CH4 emission factor	2001	0.6 g / g	USEPA, 2007h
COD CH4 emission factor	2002	0.6 g / g	USEPA, 2007h
COD CH4 emission factor	2003	0.6 g / g	USEPA, 2007h
COD CH4 emission factor	2004	0.6 g / g	USEPA, 2007h
Proportion of COD degraded anaerobically	1990	0.33	USEPA, 2007h
Proportion of COD degraded anaerobically	1991	0.33	USEPA, 2007h
Proportion of COD degraded anaerobically	1992	0.33	USEPA, 2007h
Proportion of COD degraded anaerobically	1993	0.33	USEPA, 2007h
Proportion of COD degraded anaerobically	1994	0.33	USEPA, 2007h
Proportion of COD degraded anaerobically	1995	0.33	USEPA, 2007h
Proportion of COD degraded anaerobically	1996	0.33	USEPA, 2007h
Proportion of COD degraded anaerobically	1997	0.33	USEPA, 2007h
Proportion of COD degraded anaerobically	1998	0.33	USEPA, 2007h
Proportion of COD degraded anaerobically	1999	0.33	USEPA, 2007h
Proportion of COD degraded anaerobically	2000	0.33	USEPA, 2007h
Proportion of COD degraded anaerobically	2001	0.33	USEPA, 2007h
Proportion of COD degraded anaerobically	2002	0.33	USEPA, 2007h
Proportion of COD degraded anaerobically	2003	0.33	USEPA, 2007h
Proportion of COD degraded anaerobically	2004	0.33	USEPA, 2007h
Wastewater outflow	1990	8.000E-03 l / g	USEPA, 2007h
Wastewater outflow	1991	8.000E-03 l / g	USEPA, 2007h
Wastewater outflow	1992	8.000E-03 l / g	USEPA, 2007h
Wastewater outflow	1993	8.000E-03 l / g	USEPA, 2007h
Wastewater outflow	1994	8.000E-03 l / g	USEPA, 2007h
Wastewater outflow	1995	8.000E-03 l / g	USEPA, 2007h
Wastewater outflow	1996	8.000E-03 l / g	USEPA, 2007h
Wastewater outflow	1997	8.000E-03 l / g	USEPA, 2007h
Wastewater outflow	1998	8.000E-03 l / g	USEPA, 2007h
Wastewater outflow	1999	8.000E-03 l / g	USEPA, 2007h
Wastewater outflow	2000	8.000E-03 l / g	USEPA, 2007h
Wastewater outflow	2001	8.000E-03 l / g	USEPA, 2007h
Wastewater outflow	2002	8.000E-03 l / g	USEPA, 2007h
Wastewater outflow	2003	8.000E-03 l / g	USEPA, 2007h
Wastewater outflow	2004	8.000E-03 l / g	USEPA, 2007h