

**Table C-2: EPA 2005 Nitrous Oxide Emissions**

<b>Factor</b>	<b>Value</b>	<b>Units</b>	<b>Source/Comments</b>
<b>Nitrification/Denitrification Systems - In Plant Generation</b>			
Population Served by NDN Systems	2,636,668	persons	EPA Inventory text, p. 8-12, 2005
Generation per Person	7	g/person	EPA Inventory text, p. 8-12 and 8-13, 2005
<b>NDN Systems - In Plant Generation</b>	<b>0.0185</b>	<b>Gg N<sub>2</sub>O</b>	=2,636,668 persons*7 g/person*1 Gg/1,000,000,000 g
<b>Conventional Activated Sludge Systems - In Plant Generation</b>			
U. S. Population for 2005	300.0	millions	Table 8-8, EPA Inventory, p. 8-9, 2005
% BOD Directed to Collection Systems	79	%	American Housing Survey - U.S. Census Bureau
Population served by NDN Systems	2,636,668	persons	EPA Inventory text, p. 8-12, 2005
Generation per Person	3.2	g/person	2006 IPCC Guidelines, p. 6.26, Box 6.1
<b>Conventional Treatment Systems</b>	<b>0.750</b>	<b>Gg N<sub>2</sub>O</b>	=(300,000,000 *0.79-2,636,668) persons*3.2 g/person*1 Gg/1,000,000,000 g
<b>Effluent Conversion - Post Treatment</b>			
<b>Factor</b>	<b>Value</b>	<b>Units</b>	<b>Source/Comments</b>
U. S. Population for 2005	300.0	millions	Table 8-8, EPA Inventory, p. 8-9, 2005
Annual per Capita Protein Consumption	42.1	kg/(person-year)	Table 8-11, EPA Inventory, p. 8-13, 2005
Fraction of Nitrogen in Protein	0.16	kg N/kg protein	2006 IPCC Guidelines, p. 6.25
Additional Non-Consumed Protein	1.4	unitless	2006 IPCC Guidelines, p. 6.25, developed country value
Industrial/Commercial Protein	1.25	unitless	2006 IPCC Guidelines, p. 6.25
Possible Nitrogen "Loading" to Environment	3536	Gg N	=300 MMpersons*42.1 kg/per./yr*0.16 kg N/kg pro.*1.4*1.25*1 Gg/1MMkg
Nitrogen Sequestered in Biosolids	179	Gg N	Table A-181, EPA Inventory, Annex 3.11, p.A-207
Actual Nitrogen "Loading" to Environment	3357	Gg N	=3536 - 179
Default Effluent N Conversion to N <sub>2</sub> O	0.005	kg N <sub>2</sub> O/kg N	2006 IPCC Guidelines, p 6.25
Molecular Weight Conversion	1.57	unitless	= 44/28 (mol. Wt. N <sub>2</sub> O / mol. Wt. N <sub>2</sub> )
<b>Effluent Conversion - Post Treatment</b>	<b>26.38</b>	<b>Gg N<sub>2</sub>O</b>	=(300,000,000 *0.79-2,636,668) persons*3.2 g/person*1 Gg/1,000,000,000 g
<b>TOTAL NITROUS OXIDE EMISSIONS</b>	<b>27.1</b>	<b>Gg N<sub>2</sub>O</b>	= 27.1 Gg N <sub>2</sub> O x 310 Gg CO <sub>2</sub> equivalent / Gg N <sub>2</sub> O x 1 Tg / 1000 Gg
	<b>8.42</b>	<b>Tg CO<sub>2</sub> eq.</b>	

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Factor	Value	Units	Source/Comments
<b>EPA 2005 Inventory "<u>Wastewater Treatment</u>" Percentage Breakdown for Nitrous Oxide</b>			
NDN Systems - In Plant Generation	0.1%		
Conventional Treatment - In Plant	2.8%		
Effluent Conversion - Post Treatment	97.2%		
<b>EPA 2005 Inventory ALL Nitrous Oxide Sources</b>			
All Sources Combined	468.6	Tg CO <sub>2</sub> eq.	Table ES-2, EPA Inventory, p. ES-5, 2005
Ag Soil Management	365.1	↓	↓
Mobile Combustion	38		
Nitric Acid Production	15.7		
Stationary Combustion	13.8		
Manure Management	9.5		
Wastewater Treatment	8.4		
Adipic Acid Production	6		
Settlements	5.8		
Everything Else	6.3	↓	↓