

Calculation: Potential Doses and Margins of Exposure
 Scenario: Occupational - Routine Exposure
 Pathway: Dermal Contact with Herbicide
 Herbicide: Imazapic
 Program: Rangeland, Forest, Energy/Mineral, Right of Way, Recreation/Cultural

Scenario	Application Type	Application Vehicle	Application Method	Receptor	Rate (lb a.i./acre)	Dermal Unit Exposure (mg/lb ai)	Acres Treated per Hour	Hours Per Day	Dermal Abs. Factor	Body Weight (kg)	Dermal Dose (mg/kg-day)	Dermal NOAELs (mg/kg-day)			Margin of Exposure Dermal Exposure (unitless)			
												Short	Int	Long	Short	Int	Long	
Typical	Aerial	Plane	FW	P	0.031	0.0022	250	4	0.5	70	4.87E-04	NA	NA	NA	137	NC	NC	2.81E+05
Typical	Aerial	Plane	FW	M/L	0.031	0.023	250	4	0.5	70	5.09E-03	NA	NA	NA	137	NC	NC	2.69E+04
Typical	Aerial	Helicopter	Rotary	P	0.031	0.0022	100	4	0.5	70	1.95E-04	NA	NA	NA	137	NC	NC	7.03E+05
Typical	Aerial	Helicopter	Rotary	M/L	0.031	0.023	100	4	0.5	70	2.04E-03	NA	NA	NA	137	NC	NC	6.73E+04
Typical	Ground	Human	Bpack	A/M/L	0.031	2.5	0.2	3	0.5	70	3.32E-04	NA	NA	NA	137	NC	NC	4.12E+05
Typical	Ground	Human	Hback	A	0.031	0.39	0.75	6	0.5	70	3.89E-04	NA	NA	NA	137	NC	NC	5.98E+06
Typical	Ground	Human	Hback	M/L	0.031	0.023	0.75	6	0.5	70	2.29E-05	NA	NA	NA	137	NC	NC	3.33E+05
Typical	Ground	Human	Hback	A/M/L	0.031	0.413	0.75	6	0.5	70	4.12E-04	NA	NA	NA	137	NC	NC	1.27E+06
Typical	Ground	ATV	Spot	A	0.031	0.39	0.25	5	0.5	70	1.08E-04	NA	NA	NA	137	NC	NC	3.59E+07
Typical	Ground	ATV	Spot	M/L	0.031	0.023	0.25	3	0.5	70	3.82E-06	NA	NA	NA	137	NC	NC	1.20E+06
Typical	Ground	ATV	Spot	A/M/L	0.031	0.413	0.25	5	0.5	70	1.14E-04	NA	NA	NA	137	NC	NC	1.20E+07
Typical	Ground	ATV	B/B	A	0.031	0.014	0.8	5	0.5	70	1.24E-05	NA	NA	NA	137	NC	NC	1.10E+07
Typical	Ground	ATV	B/B	M/L	0.031	0.023	0.8	3	0.5	70	1.22E-05	NA	NA	NA	137	NC	NC	1.12E+07
Typical	Ground	ATV	B/B	A/M/L	0.031	0.037	0.8	5	0.5	70	3.28E-05	NA	NA	NA	137	NC	NC	4.18E+06
Typical	Ground	Truck Mount	Spot	A	0.031	0.39	0.38	6	0.5	70	1.97E-04	NA	NA	NA	137	NC	NC	6.96E+05
Typical	Ground	Truck Mount	Spot	M/L	0.031	0.023	0.38	4	0.5	70	7.74E-06	NA	NA	NA	137	NC	NC	1.77E+07
Typical	Ground	Truck Mount	Spot	A/M/L	0.031	0.413	0.38	6	0.5	70	2.09E-04	NA	NA	NA	137	NC	NC	6.57E+05
Typical	Ground	Truck Mount	B/B	A	0.031	0.014	1.5	5	0.5	70	2.33E-05	NA	NA	NA	137	NC	NC	5.89E+06
Typical	Ground	Truck Mount	B/B	M/L	0.031	0.023	1.5	3	0.5	70	2.29E-05	NA	NA	NA	137	NC	NC	5.98E+06
Typical	Ground	Truck Mount	B/B	A/M/L	0.031	0.037	1.5	5	0.5	70	6.14E-05	NA	NA	NA	137	NC	NC	2.23E+06
Max	Aerial	Plane	FW	P	0.19	0.0022	500	6	0.5	70	8.96E-03	NA	NA	NA	137	NC	NC	1.53E+04
Max	Aerial	Plane	FW	M/L	0.19	0.023	500	6	0.5	70	9.36E-02	NA	NA	NA	137	NC	NC	1.46E+03
Max	Aerial	Helicopter	Rotary	P	0.19	0.0022	200	6	0.5	70	3.58E-03	NA	NA	NA	137	NC	NC	3.82E+04
Max	Aerial	Helicopter	Rotary	M/L	0.19	0.023	200	6	0.5	70	3.75E-02	NA	NA	NA	137	NC	NC	3.66E+03
Max	Ground	Human	Bpack	A/M/L	0.19	2.5	0.4	6	0.5	70	8.14E-03	NA	NA	NA	137	NC	NC	1.68E+04
Max	Ground	Human	Hback	A	0.19	0.39	1	8	0.5	70	4.23E-03	NA	NA	NA	137	NC	NC	3.24E+04
Max	Ground	Human	Hback	M/L	0.19	0.023	1	8	0.5	70	2.50E-04	NA	NA	NA	137	NC	NC	5.49E+05
Max	Ground	Human	Hback	A/M/L	0.19	0.413	1	8	0.5	70	4.48E-03	NA	NA	NA	137	NC	NC	3.06E+04
Max	Ground	ATV	Spot	A	0.19	0.39	0.5	9	0.5	70	2.38E-03	NA	NA	NA	137	NC	NC	5.75E+04
Max	Ground	ATV	Spot	M/L	0.19	0.023	0.5	6	0.5	70	9.36E-05	NA	NA	NA	137	NC	NC	1.46E+06
Max	Ground	ATV	Spot	A/M/L	0.19	0.413	0.5	9	0.5	70	2.52E-03	NA	NA	NA	137	NC	NC	5.43E+04
Max	Ground	ATV	B/B	A	0.19	0.014	1.6	9	0.5	70	2.74E-04	NA	NA	NA	137	NC	NC	5.01E+05
Max	Ground	ATV	B/B	M/L	0.19	0.023	1.6	5	0.5	70	2.50E-04	NA	NA	NA	137	NC	NC	5.49E+05
Max	Ground	ATV	B/B	A/M/L	0.19	0.037	1.6	9	0.5	70	7.23E-04	NA	NA	NA	137	NC	NC	1.89E+04
Max	Ground	Truck Mount	Spot	A	0.19	0.39	1	10	0.5	70	5.29E-03	NA	NA	NA	137	NC	NC	2.59E+04
Max	Ground	Truck Mount	Spot	M/L	0.19	0.023	1	8	0.5	70	2.50E-04	NA	NA	NA	137	NC	NC	5.49E+05
Max	Ground	Truck Mount	Spot	A/M/L	0.19	0.413	1	10	0.5	70	5.61E-03	NA	NA	NA	137	NC	NC	2.44E+04
Max	Ground	Truck Mount	B/B	A	0.19	0.014	2.25	8	0.5	70	3.42E-04	NA	NA	NA	137	NC	NC	4.01E+05
Max	Ground	Truck Mount	B/B	M/L	0.19	0.023	2.25	6	0.5	70	4.21E-04	NA	NA	NA	137	NC	NC	3.25E+05
Max	Ground	Truck Mount	B/B	A/M/L	0.19	0.037	2.25	8	0.5	70	9.04E-04	NA	NA	NA	137	NC	NC	1.52E+05

Calculative Potential Doses and Margins of Exposure

Scenario: Occupational - Routine Exposure

Pathway: Inhalation of Herbicide

Herbicide Imazapic

Program: Rangeland, Forest, Energy/Mineral, Right of Way, Recreation/Cultural

Scenario	Application Type	Application Vehicle	Application Method	Receptor	Rate (lb a.i./acre)	Inhalation Unit Exposure (mg/lb ai)	Acres Treated per Hour	Hours Per Day	Inhalation Absorption Factor	Body Weight (kg)	Inhalation Dose (mg/kg-day)	Inhalation NOAELs (mg/kg-day)			Margin of Exposure (unitless)		
												Short	Int	Long	Short	Int	Long
Typical	Aerial	Plane	FW	P	0.031	0.000068	250	4	1	70	3.01E-05	350	350	350	1.16E+07	1.16E+07	4.55E+06
Typical	Aerial	Plane	FW	M/L	0.031	0.0012	250	4	1	70	5.31E-04	350	350	350	6.59E+05	6.59E+05	2.58E+05
Typical	Aerial	Helicopter	Rotary	P	0.031	0.000068	100	4	1	70	1.20E-05	350	350	350	2.91E+07	2.91E+07	1.14E+07
Typical	Aerial	Helicopter	Rotary	M/L	0.031	0.0012	100	4	1	70	2.13E-04	350	350	350	1.65E+06	1.65E+06	6.44E+05
Typical	Ground	Human	Bpack	A/M/L	0.031	0.03	0.2	3	1	70	7.97E-06	350	350	350	4.39E+07	4.39E+07	1.72E+07
Typical	Ground	Human	Hback	A	0.031	0.0039	0.75	6	1	70	7.77E-06	350	350	350	4.50E+07	4.50E+07	1.76E+07
Typical	Ground	Human	Hback	M/L	0.031	0.0012	0.75	6	1	70	2.39E-06	350	350	350	1.46E+08	1.46E+08	5.73E+07
Typical	Ground	Human	Hback	A/M/L	0.031	0.0051	0.75	6	1	70	1.02E-05	350	350	350	3.44E+07	3.44E+07	1.35E+07
Typical	Ground	ATV	Spot	A	0.031	0.0039	0.25	5	1	70	2.16E-06	350	350	350	1.62E+08	1.62E+08	6.35E+07
Typical	Ground	ATV	Spot	M/L	0.031	0.0012	0.25	3	1	70	3.99E-07	350	350	350	8.78E+08	8.78E+08	3.44E+08
Typical	Ground	ATV	Spot	A/M/L	0.031	0.0051	0.25	5	1	70	2.82E-06	350	350	350	1.24E+08	1.24E+08	4.85E+07
Typical	Ground	ATV	B/B	A	0.031	0.00074	0.8	5	1	70	1.31E-06	350	350	350	2.67E+08	2.67E+08	1.05E+08
Typical	Ground	ATV	B/B	M/L	0.031	0.0012	0.8	3	1	70	1.28E-06	350	350	350	2.74E+08	2.74E+08	1.07E+08
Typical	Ground	ATV	B/B	A/M/L	0.031	0.00194	0.8	5	1	70	3.44E-06	350	350	350	1.02E+08	1.02E+08	3.99E+07
Typical	Ground	Truck Mount	Spot	A	0.031	0.0039	0.38	6	1	70	3.94E-06	350	350	350	8.89E+07	8.89E+07	3.48E+07
Typical	Ground	Truck Mount	Spot	M/L	0.031	0.0012	0.38	4	1	70	8.08E-07	350	350	350	4.33E+08	4.33E+08	1.70E+08
Typical	Ground	Truck Mount	Spot	A/M/L	0.031	0.0051	0.38	6	1	70	5.15E-06	350	350	350	6.80E+07	6.80E+07	2.66E+07
Typical	Ground	Truck Mount	B/B	A	0.031	0.00074	1.5	5	1	70	2.46E-06	350	350	350	1.42E+08	1.42E+08	5.57E+07
Typical	Ground	Truck Mount	B/B	M/L	0.031	0.0012	1.5	3	1	70	2.39E-06	350	350	350	1.46E+08	1.46E+08	5.73E+07
Typical	Ground	Truck Mount	B/B	A/M/L	0.031	0.00194	1.5	5	1	70	6.44E-06	350	350	350	5.43E+07	5.43E+07	2.13E+07
Max	Aerial	Plane	FW	P	0.19	0.000068	500	6	1	70	5.54E-04	350	350	350	6.32E+05	6.32E+05	2.47E+05
Max	Aerial	Plane	FW	M/L	0.19	0.0012	500	6	1	70	9.77E-03	350	350	350	3.58E+04	3.58E+04	1.40E+04
Max	Aerial	Helicopter	Rotary	P	0.19	0.000068	200	6	1	70	2.21E-04	350	350	350	1.58E+06	1.58E+06	6.19E+05
Max	Aerial	Helicopter	Rotary	M/L	0.19	0.0012	200	6	1	70	3.91E-03	350	350	350	8.95E+04	8.95E+04	3.51E+04
Max	Ground	Human	Bpack	A/M/L	0.19	0.03	0.4	6	1	70	1.95E-04	350	350	350	1.79E+06	1.79E+06	7.01E+05
Max	Ground	Human	Hback	A	0.19	0.0039	1	8	1	70	8.47E-05	350	350	350	4.13E+06	4.13E+06	1.62E+06
Max	Ground	Human	Hback	M/L	0.19	0.0012	1	8	1	70	2.61E-05	350	350	350	1.34E+07	1.34E+07	5.26E+06
Max	Ground	Human	Hback	A/M/L	0.19	0.0051	1	8	1	70	1.11E-04	350	350	350	3.16E+06	3.16E+06	1.24E+06
Max	Ground	ATV	Spot	A	0.19	0.0039	0.5	9	1	70	4.76E-05	350	350	350	7.35E+06	7.35E+06	2.88E+06
Max	Ground	ATV	Spot	M/L	0.19	0.0012	0.5	6	1	70	9.77E-06	350	350	350	3.58E+07	3.58E+07	1.40E+07
Max	Ground	ATV	Spot	A/M/L	0.19	0.0051	0.5	9	1	70	6.23E-05	350	350	350	5.62E+06	5.62E+06	2.20E+06
Max	Ground	ATV	B/B	A	0.19	0.00074	1.6	9	1	70	2.89E-05	350	350	350	1.21E+07	1.21E+07	4.74E+06
Max	Ground	ATV	B/B	M/L	0.19	0.0012	1.6	5	1	70	2.61E-05	350	350	350	1.34E+07	1.34E+07	5.26E+06
Max	Ground	ATV	B/B	A/M/L	0.19	0.00194	1.6	9	1	70	7.58E-05	350	350	350	4.62E+06	4.62E+06	1.81E+06
Max	Ground	Truck Mount	Spot	A	0.19	0.0039	1	10	1	70	1.06E-04	350	350	350	3.31E+06	3.31E+06	1.29E+06
Max	Ground	Truck Mount	Spot	M/L	0.19	0.0012	1	8	1	70	2.61E-05	350	350	350	1.34E+07	1.34E+07	5.26E+06
Max	Ground	Truck Mount	Spot	A/M/L	0.19	0.0051	1	10	1	70	1.38E-04	350	350	350	2.53E+06	2.53E+06	9.90E+05
Max	Ground	Truck Mount	B/B	A	0.19	0.00074	2.25	8	1	70	3.62E-05	350	350	350	9.68E+06	9.68E+06	3.79E+06
Max	Ground	Truck Mount	B/B	M/L	0.19	0.0012	2.25	6	1	70	4.40E-05	350	350	350	7.96E+06	7.96E+06	3.12E+06
Max	Ground	Truck Mount	B/B	A/M/L	0.19	0.00194	2.25	8	1	70	9.48E-05	350	350	350	3.69E+06	3.69E+06	1.45E+06

Calculation: Aggregate Risk Level
 Scenario: Occupational - Routine Exposure
 Pathway: Dermal Contact with and Inhalation of Herbicide
 Herbicide: Imazapic
 Program: Rangeland, Forest, Energy/Mineral, Right of Way, Recreation/Cultural

Scenario	Application Type	Application Vehicle	Application Method	Receptor	Margin of Exposure Dermal Exposure (unitless)			Margin of Exposure Inhalation Exposure (unitless)			Target Margin of Exposure		Aggregate Risk Index		
					Short	Int	Long	Short	Int	Long	Short/Int	Long	Short	Int	Long
Typical	Aerial	Plane	FW	P	NC	NC	2.81E+05	1.16E+07	1.16E+07	4.55E+06	100	300	1.16E+05	1.16E+05	8.83E+02
Typical	Aerial	Plane	FW	M/L	NC	NC	2.69E+04	6.59E+05	6.59E+05	2.58E+05	100	300	6.59E+03	6.59E+03	8.12E+01
Typical	Aerial	Helicopter	Rotary	P	NC	NC	7.03E+05	2.91E+07	2.91E+07	1.14E+07	100	300	2.91E+05	2.91E+05	2.21E+03
Typical	Aerial	Helicopter	Rotary	M/L	NC	NC	6.73E+04	1.65E+06	1.65E+06	6.44E+05	100	300	1.65E+04	1.65E+04	2.03E+02
Typical	Ground	Human	Bpack	A/M/L	NC	NC	4.12E+05	4.39E+07	4.39E+07	1.72E+07	100	300	4.39E+05	4.39E+05	1.34E+03
Typical	Ground	Human	Hback	A	NC	NC	3.53E+05	4.50E+07	4.50E+07	1.76E+07	100	300	4.50E+05	4.50E+05	1.15E+03
Typical	Ground	Human	Hback	M/L	NC	NC	5.98E+06	1.46E+08	1.46E+08	5.73E+07	100	300	1.46E+06	1.46E+06	1.80E+04
Typical	Ground	Human	Hback	A/M/L	NC	NC	3.33E+05	3.44E+07	3.44E+07	1.35E+07	100	300	3.44E+05	3.44E+05	1.08E+03
Typical	Ground	ATV	Spot	A	NC	NC	1.27E+06	1.62E+08	1.62E+08	6.35E+07	100	300	1.62E+06	1.62E+06	4.15E+03
Typical	Ground	ATV	Spot	M/L	NC	NC	3.59E+07	8.78E+08	8.78E+08	3.44E+08	100	300	8.78E+06	8.78E+06	1.08E+05
Typical	Ground	ATV	Spot	A/M/L	NC	NC	1.20E+06	1.24E+08	1.24E+08	4.85E+07	100	300	1.24E+06	1.24E+06	3.90E+03
Typical	Ground	ATV	B/B	A	NC	NC	1.10E+07	2.67E+08	2.67E+08	1.05E+08	100	300	2.67E+06	2.67E+06	3.33E+04
Typical	Ground	ATV	B/B	M/L	NC	NC	1.12E+07	2.74E+08	2.74E+08	1.07E+08	100	300	2.74E+06	2.74E+06	3.38E+04
Typical	Ground	ATV	B/B	A/M/L	NC	NC	4.18E+06	1.02E+08	1.02E+08	3.99E+07	100	300	1.02E+06	1.02E+06	1.26E+04
Typical	Ground	Truck Mount	Spot	A	NC	NC	6.96E+05	8.89E+07	8.89E+07	3.48E+07	100	300	8.89E+05	8.89E+05	2.27E+03
Typical	Ground	Truck Mount	Spot	M/L	NC	NC	1.77E+07	4.33E+08	4.33E+08	1.70E+08	100	300	4.33E+06	4.33E+06	5.34E+04
Typical	Ground	Truck Mount	Spot	A/M/L	NC	NC	6.57E+05	6.80E+07	6.80E+07	2.66E+07	100	300	6.80E+05	6.80E+05	2.14E+03
Typical	Ground	Truck Mount	B/B	A	NC	NC	5.89E+06	1.42E+08	1.42E+08	5.57E+07	100	300	1.42E+06	1.42E+06	1.78E+04
Typical	Ground	Truck Mount	B/B	M/L	NC	NC	5.98E+06	1.46E+08	1.46E+08	5.73E+07	100	300	1.46E+06	1.46E+06	1.80E+04
Typical	Ground	Truck Mount	B/B	A/M/L	NC	NC	2.23E+06	5.43E+07	5.43E+07	2.13E+07	100	300	5.43E+05	5.43E+05	6.73E+03
Max	Aerial	Plane	FW	P	NC	NC	1.53E+04	6.32E+05	6.32E+05	2.47E+05	100	300	6.32E+03	6.32E+03	4.80E+01
Max	Aerial	Plane	FW	M/L	NC	NC	1.46E+03	3.58E+04	3.58E+04	1.40E+04	100	300	3.58E+02	3.58E+02	4.42E+00
Max	Aerial	Helicopter	Rotary	P	NC	NC	3.82E+04	1.58E+06	1.58E+06	6.19E+05	100	300	1.58E+04	1.58E+04	1.20E+02
Max	Aerial	Helicopter	Rotary	M/L	NC	NC	3.66E+03	8.95E+04	8.95E+04	3.51E+04	100	300	8.95E+02	8.95E+02	1.10E+01
Max	Ground	Human	Bpack	A/M/L	NC	NC	1.68E+04	1.79E+06	1.79E+06	7.01E+05	100	300	1.79E+04	1.79E+04	5.48E+01
Max	Ground	Human	Hback	A	NC	NC	3.24E+04	4.13E+06	4.13E+06	1.62E+06	100	300	4.13E+04	4.13E+04	1.06E+02
Max	Ground	Human	Hback	M/L	NC	NC	5.49E+05	1.34E+07	1.34E+07	5.26E+06	100	300	1.34E+04	1.34E+04	1.66E+03
Max	Ground	Human	Hback	A/M/L	NC	NC	3.06E+04	3.16E+06	3.16E+06	1.24E+06	100	300	3.16E+04	3.16E+04	9.94E+01
Max	Ground	ATV	Spot	A	NC	NC	5.75E+04	7.35E+06	7.35E+06	2.88E+06	100	300	7.35E+04	7.35E+04	1.88E+02
Max	Ground	ATV	Spot	M/L	NC	NC	1.46E+06	3.58E+07	3.58E+07	1.40E+07	100	300	3.58E+05	3.58E+05	4.42E+03
Max	Ground	ATV	Spot	A/M/L	NC	NC	5.43E+04	5.62E+06	5.62E+06	2.20E+06	100	300	5.62E+04	5.62E+04	1.77E+02
Max	Ground	ATV	B/B	A	NC	NC	5.01E+05	1.21E+07	1.21E+07	4.74E+06	100	300	1.21E+05	1.21E+05	1.51E+03
Max	Ground	ATV	B/B	M/L	NC	NC	5.49E+05	1.34E+07	1.34E+07	5.26E+06	100	300	1.34E+05	1.34E+05	1.66E+03
Max	Ground	ATV	B/B	A/M/L	NC	NC	1.89E+05	4.62E+06	4.62E+06	1.81E+06	100	300	4.62E+04	4.62E+04	5.72E+02
Max	Ground	Truck Mount	Spot	A	NC	NC	2.59E+04	3.31E+06	3.31E+06	1.29E+06	100	300	3.31E+04	3.31E+04	8.46E+01
Max	Ground	Truck Mount	Spot	M/L	NC	NC	5.49E+05	1.34E+07	1.34E+07	5.26E+06	100	300	1.34E+05	1.34E+05	1.66E+03
Max	Ground	Truck Mount	Spot	A/M/L	NC	NC	2.44E+04	2.53E+06	2.53E+06	9.90E+05	100	300	2.53E+04	2.53E+04	7.95E+01
Max	Ground	Truck Mount	B/B	A	NC	NC	4.01E+05	9.68E+06	9.68E+06	3.79E+06	100	300	9.68E+04	9.68E+04	1.21E+03
Max	Ground	Truck Mount	B/B	M/L	NC	NC	3.25E+05	7.96E+06	7.96E+06	3.12E+06	100	300	7.96E+04	7.96E+04	9.81E+02
Max	Ground	Truck Mount	B/B	A/M/L	NC	NC	1.52E+05	3.69E+06	3.69E+06	1.45E+06	100	300	3.69E+04	3.69E+04	4.57E+02

