the air we breathe

The disciplines required to understand: NO, you cannot continue to do anything you desire, regardless of the consequences. Are extremely critical elements now, for all life on earth. We are approaching 8 billion people. That means MORE THAN TWICE the damage to our environment today/ than just fifty years ago. Entirely because of human causes! What you want, has become irrelevant, if you demand: a future for your child!

To establish oxygen realities In cubic feet per minute of air:
When we don't have the airflow numbers, we can use the **general rule of 2.5 times the horsepower of the engine** to get an approximate amount of air required. http://www.widman.biz/English/Calculators/CFM.html

The number of vehicles in operation worldwide surpassed the **1 billion-unit** mark in 2010 for the first time ever.
http://wardsauto.com/ar/world_vehicle_population_110815

We take these two numbers and give the average horsepower of a vehicle at 100/ per vehicle for simple understanding to achieve an average per vehicle of: 250 cubic feet of air per minute of running time/ regardless of what that is.

http://blog.tempoplugin.com/2013/7-time-consuming-things-an-average-joe-spends-in-a-lifetime/
According to a study done by the Harvard Health Watch, an average American spends 101 minutes per day driving. That means that in a lifetime, an average Joe spends a whopping 37,935 hours driving a car (assuming that s/he starts driving at 17 and drives until 78.7 years old). In that time, average Joe will drive around 798,000 miles (1,284,256 kilometers), which is approximately the distance it takes to drive to the moon more than three times!
http://blog.tempoplugin.com/2013/7-time-consuming-things-an-average-joe-spends-in-a-lifetime/
Sep 5, 2013 - In that time, average Joe will drive around 798,000 miles (1,284,256 ... from the age of 20-65 and gets two weeks of vacation every year. .... For a car being driven an average of 101 minutes per day, that's ... USED BY MORE THAN 6,000 COMPANIES Free trial IN OVER 100 COUNTRIES WORLDWIDE ...

We now add 250 cubic feet of air per vehicle to 101 minutes per day of vehicle time for Americans and lets average that done to 60 total minutes per day (coming and going/ delivery trucks etc) for the world. So the average vehicle/ driver: uses roughly 15,000 cubic feet of air per day/ every day. Or more correctly the oxygen in air for burning fuel.
We now add in the total vehicles used across this world at one billion for simple understanding as stated above: and learn that our worldwide personal transportation consumes the oxygen in 15 trillion cubic feet of air per day. Everyday based upon an assumption of usage/ unproven.
Or on a yearly seasonal basis, as is consistent with reproduction schedules for the non-human life that supplies our oxygen: that would be roughly 5,475 trillion cubic feet of air required; and all the oxygen that represents. The question is: HOW MANY non-human life forms does it take to create that amount of oxygen? On a planet already devastated with destruction?

Let's see how much air we actually need.= **32.95 Cubic Feet per 1000 BTU Combustion Air will be Required for proper furnace combustion**. http://comfort-calc.net/Combustion_Air_Calculation.html
http://www.bp.com/content/dam/bp/pdf/Energy-economics/statistical-review-2014/BP-statistical-review-of-world-energy-2014-full-report.pdf
crude oil usage: **2003 till 2013**

in thousands of barrels a day
Total World 77639 81054 82107 82593 82383 82955 81262 83296 84049 86204 **86754** 0.6% 100.0%
natural gas usage: **in billion cubic metres**
Total World 2621.3 2702.8 2778.6 2881.8 2962.7 3068.5 2981.0 3190.8 3287.7 3343.3 **3369.9** 1.1% 100.0%
coal usage: **million tonnes of oil equivalent**
Total World 2572.3 2781.9 2942.9 3101.7 3212.3 3326.2 3356.0 3547.8 3767.8 3862.2 **3881.4** 0.8% 100.0%

http://en.wikipedia.org/wiki/Barrel_of_oil_equivalent

The barrel of oil equivalent (BOE) is a unit of energy based on the approximate energy released by burning one barrel (42 U.S. gallons or 158.9873 litres) of crude oil.
The U.S. Internal Revenue Service defines a BOE as equal to 5,800,000 BTU.
According to BP: WORLD use of oil products is 86,754,000 barrels a day.
http://oilprice.com/Energy/Crude-Oil/Oil-is-too-Precious-to-be-Used-as-Transportation-Fuel.html
Nov 11, 2012 - In the United States **71 percent of the petroleum products consumed are used in transportation.** If the country were able to run its transportation ...
Equals 60,727,800 barrels a day for crude oil products/ fossil fuel burning. One barrel of oil is equal to= 5,800,000 BTU. Divide by 1000 =5,800 x 32.95 cubic feet of air **=191,110 cubic feet of air for combustion of one barrel of oil.** 60,727,800 barrels used for burning x 191,110 cubic feet of air per barrel**=11,605,689,858,000 cubic feet of air per day for oil**

The U.S. Internal Revenue Service defines a BOE as equal to 5.8 × 106 BTU.[1] Typically 5,800 cubic feet of natural gas or 58 CCF are equivalent to one BOE. The USGS gives a figure of 6,000 cubic feet (170 cubic meters) of typical natural gas.[2]
According to BP: 2013 usage of natural gas equals 3369.9 billion cubic meters. Converted too 24951857142.857 barrels of oil (boe) minus 1.7 percent worldwide for plastic, etc production = 24527675571 boe x 191,110 cubic feet of air for combustion of one barrel of oil. **Equals 4687484078455687 cubic feet, of air, for natural gas combustion**

http://www.eia.gov/tools/faqs/faq.cfm?id=34&t=6
n 2010, about 191 million barrels of LPG and NGL were used in the United States to make plastic products in the plastic materials and resins industry, which was equal to about 2.7% of total U.S. petroleum consumption. Of those 191 million barrels, 190 million barrels were used as feedstock.
Since these originate from crude oil or natural gas it is unclear what their actual participation is.

In addition to LPG and NGL, about 412 billion cubic feet (Bcf) of natural gas were used to make plastic materials and resins in 2010. This was equal to about This was equal to about 1.7% of total U.S. natural gas consumption. 13 Bcf were used as feedstock for plastics.

Metric users may talk of the **tonne of oil equivalent (TOE)**, or more often million TOE (MTOE). Since this is a measurement of weight, any conversion to barrels of oil equivalent depends on the density of the oil in question, as well as the energy content. **Typically 1 tonne of oil has a volume of 6.8-7.5 barrels.** The United States EIA suggests 1TOE has an average energy value of 39.68 million Btu.[5]
According to BP: 2013 used 3881.4 coal usage: million tonnes of oil equivalent. The combustion air required for coal is slightly less than what is required for oil products. 191,110 cubic feet of air for combustion of one barrel of oil. 27724285714.286 barrels of oil equivalent cubic feet of air= 5,298,388,242,857,197 therefore divided by 1.16 we should see a need minus excess air of **4567576071428619 cubic feet of air needed for combustion for coal.**

For combustion of these three products the volume of air required is roughly 9266665839742306 cubic feet of atmosphere.

We then consider forest fire, etc as an additional factor
https://www.worldwildlife.org/threats/deforestation
Some 46-58 thousand square miles of forest are lost each year?equivalent to 36 ... millions of acres of forest around the world are

destroyed or degraded by fire
https://www.google.com/search?q=forest+fire+statistics+world;+acreage+lost&rlz=1C1FDUM_enUS489US489&espv=2&biw=1024&bih=495&tbm=isch&tbo=u&source=univ&sa=X&ei=ca0VVZj9K5bgoASy7YDADw&ved=0CCsQsAQ&dpr=1.25

http://www.conserve-energy-future.com/various-deforestation-facts.php
Facts 17: 4500 acres of forests are cleared every hour by forest fires, bull dozers, ... Facts 19: The total world forest loss till date is 7.3 million hectares per year.

http://www.ucsusa.org/global_warming/solutions/stop-deforestation/deforestation-global-warming-carbon-emissions.html#.VRWvT_nF9Wo
Three billion tons of anything is a lot, but it's hard to grasp just how much ? particularly when it's tons of CO2, which we don't have any everyday experience in weighing. One way to look at it is that the average U.S. car emits about 5 tons of CO2 a year from the tailpipe, **so three billion tons is the equivalent of 600 million cars ?** about twice as many as there are in the whole United States. Another way of expressing it is that this is the equivalent of about 13 million railcars full of coal, which would stretch about 125,000 miles (half the distance to the moon).
It's also equal to the total emissions from Western Europe, including Austria, the Czech Republic, Slovenia, all the Scandinavian countries, and Finland.

What's the percentage?
That's useful, but most often we tend to get a better sense of such large numbers by converting them to percentages ? putting them as a fraction of the total emissions of the whole world. Thus, the last assessment of the Intergovernmental Panel on Climate Change (IPCC) in 2007 used the figure of 17 percent to explain the fraction of CO2 that came from deforestation, and a consensus of scientists and organizations released at the 2009 Barcelona climate conference, based on newer research, **estimated that the proportion was about 15 percent.**

15 percent of emissions will translate effectively with the combustion air needed for the fire to exist. Therefore we take the current total cubic volume of air used in fossil fuels 9266665839742306 x 1.15 = 1.0656 x 10 to the sixteenth power: cubic feet of atmospheric air. Per year. for forest fire. Which does not include charcoal, intentional fire, building fire, trash fires, etc

We then add in **human needs for oxygen/** as well as other creatures

The average adult at rest inhales and exhales something like 7 or 8 liters (about one-fourth of a cubic foot) of air per minute. That totals something like 11,000 liters of air (388 cubic feet) in a day.
The air that is inhaled is about 20-percent oxygen, and the air that is exhaled is about 15-percent oxygen, so about 5-percent of the volume of air is consumed in each breath and converted to carbon dioxide. Therefore, a human being uses about 550 liters of pure oxygen (19 cubic feet) per day. http://health.howstuffworks.com/human-body/systems/respiratory/question98.htm
388 x 8 billion people (soon)= 3.1 trillion cubic feet per day for humanity.
Total number of other creatures needing oxygen to survive has to be estimated: don't know, call it 10 trillion cubic feet per day.
13 trillion for us all per day = 4,745. Trillion per year

BRINGING US TO A consumption rate: GRAND TOTAL OF 1.066 X 10 TO THE SIXTEENTH POWER OR 1,066,000,000,000,000 CUBIC FEET OF ATMOSPHERE, with oxygen per year.

http://www.answers.com/Q/What_is_the_volume_of_the_troposphere
Total volume of the troposphere; Volume of the Earth. 4 x ¶(6378.15)3 /3 = 10.8687 x 1020 m3. Radius from the centre of the Earth to the top of the troposphere: = 6378.15 + 16 = 6394.15 km volume of the troposphere= [10.9506 - 10.8687] x1020 m3 = 8.14 x 1018 m3
Equals 292635.692 cubic feet
OR, at the current rate of usage/ the question is: on what date will we reduce the percentage of oxygen, in the atmosphere; needed for life/ to unbearable levels? There is more oxygen than just the troposphere/ but the question is when?

Of interest in this calculation is
http://www.nytimes.com/1993/01/05/science/the-environment-oxygen-loss-causing-concern-in-biosphere-2.html?pagewanted=all&src=pm ---------- Biosphere 2 No going back! You do need to consider the biosphere project very carefully. 7 million cubic feet of air enclosed/ with 5 people I believe; couldn't breathe in less than 6 months. No combustion/ fire; of any kind. Think about it.
http://www.engineeringtoolbox.com/fuels-combustion-efficiency-d_167.html
Stable combustion conditions requires the right amounts of fuels and oxygen. The combustion products are heat energy, carbon dioxide, water vapor, nitrogen, and other gases (excluding oxygen). In theory there is a specific amount of oxygen needed to completely burn a given amount of fuel. In practice, burning conditions are never ideal.

Therefore, more air than ideal must be supplied to burn all fuel completely. The amount of air more than the theoretical requirement is referred to as excess air.

Power plant boilers normally run about 10 to 20 percent excess air. Natural gas-fired boilers may run as low as 5 percent excess air. Pulverized coal-fired boilers may run with 20 percent excess air. Gas turbines runs very lean with up to 300 percent excess air.

Required Air For Combustion
(no excess air)
1. Standard air @ sea level and 70? F has a
density of 0.07495 lbs/ft3
2. 1 lb of standard air @ sea level and 70? F has
a volume of 13.34 ft3
3. lbs. air/lb. natural gas = 17.5
4. lbs. air/lbs. oil = 14.0
5. lbs. air/lbs. coal = 12.0
6. lbs. air/MMBtu. oil = 750
7. lbs. air/MMBtu. natural gas = 720
8. Required air for combustion increases 4.0% for
every 1000 ft. above sea level
9. lbs/hr air = (SCFM) x 4.5 @ 70?F.
10. Required air for combustion in CFM increases 1.9% for every 10? above 70? F.
http://www.metroservicesinc.com/Combustion%20University/CombustionTheory.pdf

we must now consider the reality of pollution/ added into what we breathe. Because that can be just as devastating as oxygen deprivation.

Cars and global warming
http://www.ucsusa.org/our-work/clean-vehicles/car-emissions-and-global-warming#.VRR_p_nF9Wo
To establish the critical link between carbon dioxide
http://judithcurry.com/2013/05/16/docmartyns-estimate-of-climate-sensitivity-and-forecast-of-future-global-temperatures/

http://www.scientificamerican.com/article/global-growth-in-fossil-fuel-burning-continues-unabated/
Here's why: Capping a global average temperature increase at 2?C (3.6?F) over pre-industrial times ? the internationally agreed-upon point beyond which the effects of climate change have been deemed to become dangerous ? requires capping total future global CO2 emissions at 1,000 gigatonnes beginning this year. That's called the carbon budget, and it's likely to be used up by 2040, the IEA said.

http://www.epa.gov/climatechange/ghgemissions/global.html

http://www.naturalhistorymag.com/htmlsite/master.html?http://www.naturalhistorymag.com/htmlsite/0506/0506_feature.html
Projected new coal-fired generating capacity is shown. The total capacity is the equivalent of 1,357 new thousand-megawatt plants,

which would emit more CO2 over their operating lives?572 billion tons?than all the CO2 emitted by all human coal burning before 2003.
https://www.google.com/search?q=world+air+pollution+statistics+2013&rlz=1C1FDUM_enUS489US489&espv=2&biw=1024&bih=495&tbm=isch&tbo=u&source=univ&sa=X&ei=JrwVVcLCKI7ooATPkYH4BA&ved=0CDEQsAQ