



# Uptown Oil

*for cleaner city air*

## Recycling Used Cooking Oil into Biodiesel

Carbon footprint reduction in the  
Construction Industry



London South Bank University  
18<sup>th</sup> May 2009



# What's the perceived problem

***“The government has stated that the construction, occupation and maintenance of buildings account for around 50% of the UK's total CO2 emissions ”***

***Michael Brown, CIOB Deputy Chief Executive, June 2007 <sup>1</sup>***

- The production of building materials accounts for a further 10% <sup>2</sup>
- The construction industry generates one third of all the waste in Britain <sup>2</sup>
- 20% of new building materials on the average building site are thrown away at the end of the job.
- Government buildings in England and Wales emit more than 11 million tonnes of CO2 a year, more than the entire country of Kenya <sup>3</sup>
- The Climate Change Bill, will set a goal of slashing the UK's buildings' CO2 emissions by 30 percent by 2020 and by 80 percent by 2050

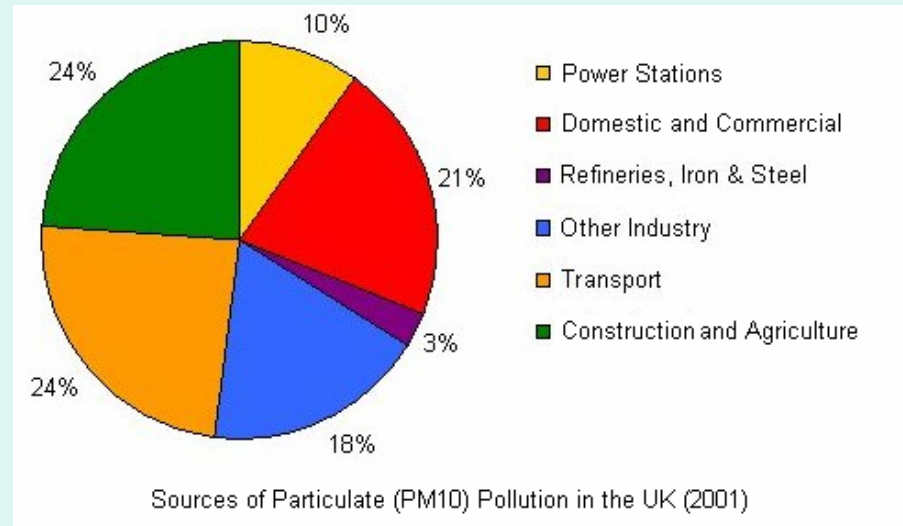
***The construction industry is therefore heavily implicated in CO2 and waste reduction targets. Time to act to pre-empt punitive legislation ??***

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# Fossil Diesel use in the construction industry and PM10s

***Construction Industry seen as significant air pollution source  
Especially urban areas sensitive to construction activity pollutants***



The major source of DPM10 on construction sites comes from the diesel engine exhausts of vehicles and heavy equipment - consists of soot, sulphates and silicates, all of which increase the health risks of particle inhalation <sup>5</sup>

Diesel is also responsible for emissions of carbon monoxide, hydrocarbons, nitrogen oxides, sulphur dioxide and carbon dioxide

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# How can the construction industry change this perception, and lower its carbon footprint? – First recycle your UCO

- Large construction sites can be major users of vegetable oil, cooking workers food
- Recycling of the used cooking oil (UCO) prevents landfill and fly-tipping which prevents the formation of one of the most damaging GHG emissions, Methane
- Methane is 25 times as strong a greenhouse gas as CO<sub>2</sub> (GWP – global warming potential)<sup>6</sup>
- Wembley stadium – 21 catering units using 40L per day = 1 tonne per day of used cooking oil = 1070m<sup>3</sup> of pure CO<sub>2</sub> when decomposed
- Because Wembley's waste oil was not recycled but landfilled or tipped, this produced the equivalent GHG effect of 26,750m<sup>3</sup> CO<sub>2</sub> equivalent per day (as methane) !!
- Olympic site – How much fried food is being provided and where does all the used oil go? Fly tipping of oil is illegal and hugely wasteful of a useful resource that can be reused to power the construction equipment as biodiesel – directly displacing the same volume of fossil diesel
- Recycling used cooking oil into carbon neutral biodiesel is an easily demonstrable activity to lower your carbon footprint and meet CSR objectives

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# How can Uptown help you recycle your used cooking oil and therefore lower your carbon emissions?

***We collect your sites waste cooking oil, free of charge – tell your caterers***

Uptown Oil places IBCs on large construction sites to gather used cooking oil for recycling. We collect cans & drums from smaller sites

Simple, easy solution, organised and enforced by project Master Contractor.

Compliance by catering sub-contractors credits your CO2 reduction targets

Each full IBC lowers your sites carbon footprint by

**3.2 tonnes of CO2**

1 tonne UCO = ~80% carbon = 800kg C = 3,200kg CO2



1000L IBC

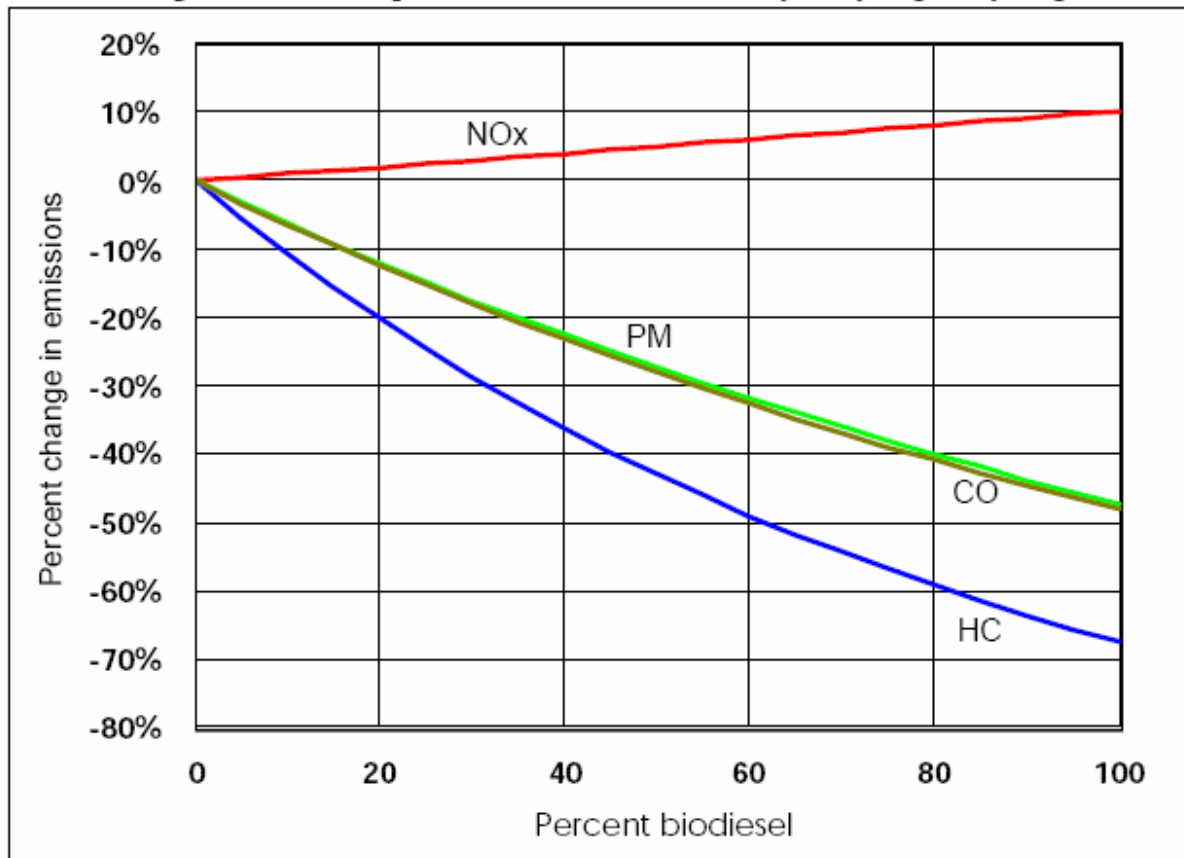
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## 2) Use Recycled Biodiesel to power your plant

Figure ES-A

Average emission impacts of biodiesel for heavy-duty highway engines



**100% Recycled biodiesel produces:**

- 100% less SO<sub>4</sub>
- ~80% less CO<sub>2</sub>
- ~70% less HC
- ~50% less CO
- ~50% less DPM
- ~10% more NO<sub>x</sub>\*

Figures taken from US EPA study 2002  
EPA420-P-02-001 <sup>7</sup>

\* This data is inconclusive <sup>8</sup>

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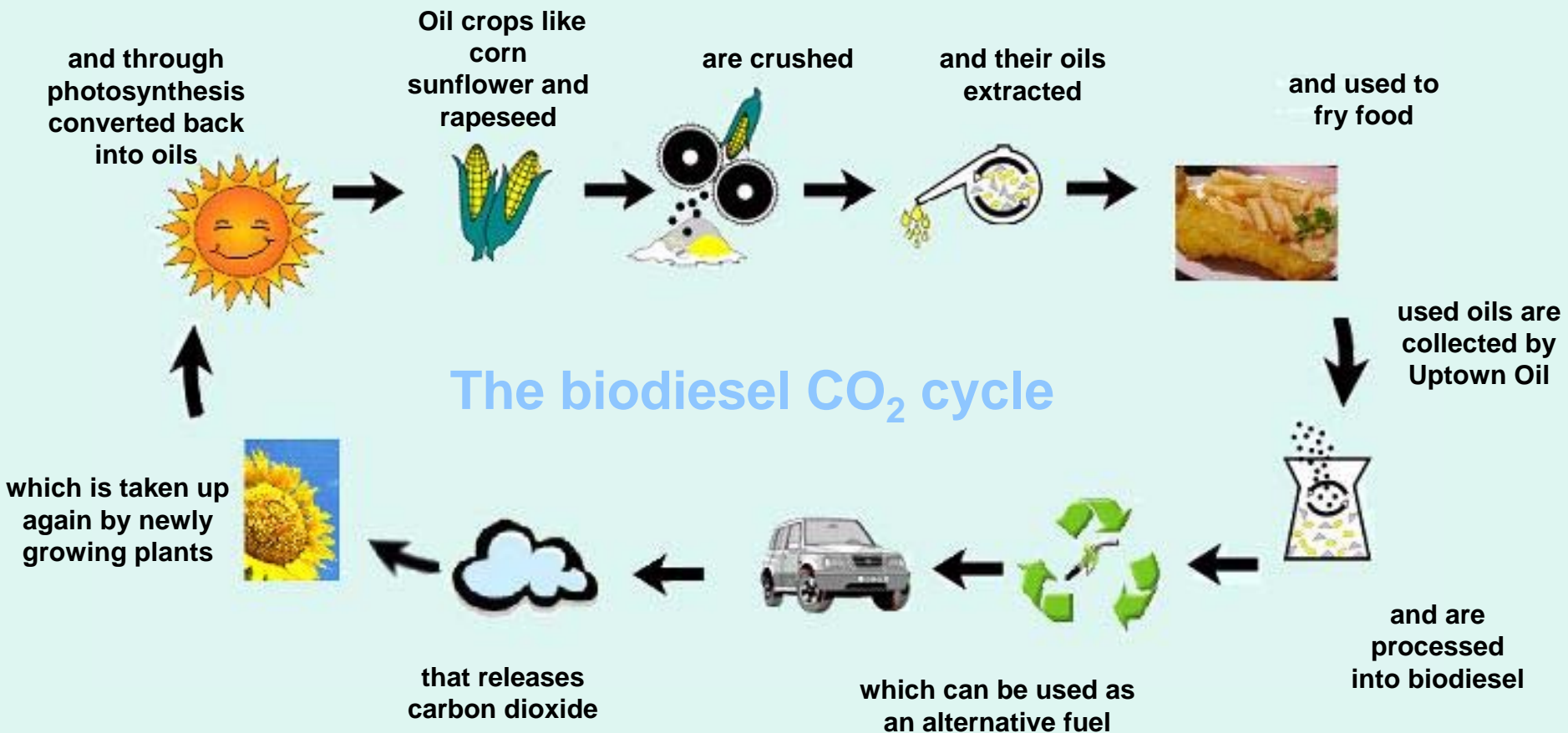
# Biodiesel general benefits and advantages

- No change to plant or engines – all diesel engines run on biodiesel – diesel engine was invented to run on peanut oil !
- Significant reduction in health hazard for workforce – DPM10 reduction
- Significant reduction in GHG's especially CO2 and methane
- Lower cost – Uptown Bio = 90ppl, today's UK national average = 103.0ppl
- Fuel Price stability and predictability – not at the mercy of oil producing cartels
- Better combustion = better fuel economy despite marginally less KJ/L
- Better lubricity, no need for sulphur additives
- Vehicles smoke much less with biodiesel
- Biodegradable and non toxic
- Non toxic to waterways (although raises BOD and can lead to deoxygenation)
  
- Demonstrates a commitment to commercial environmentalism
- Forms part of demonstrable CSR

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# Why is recycled biodiesel good for the environment?

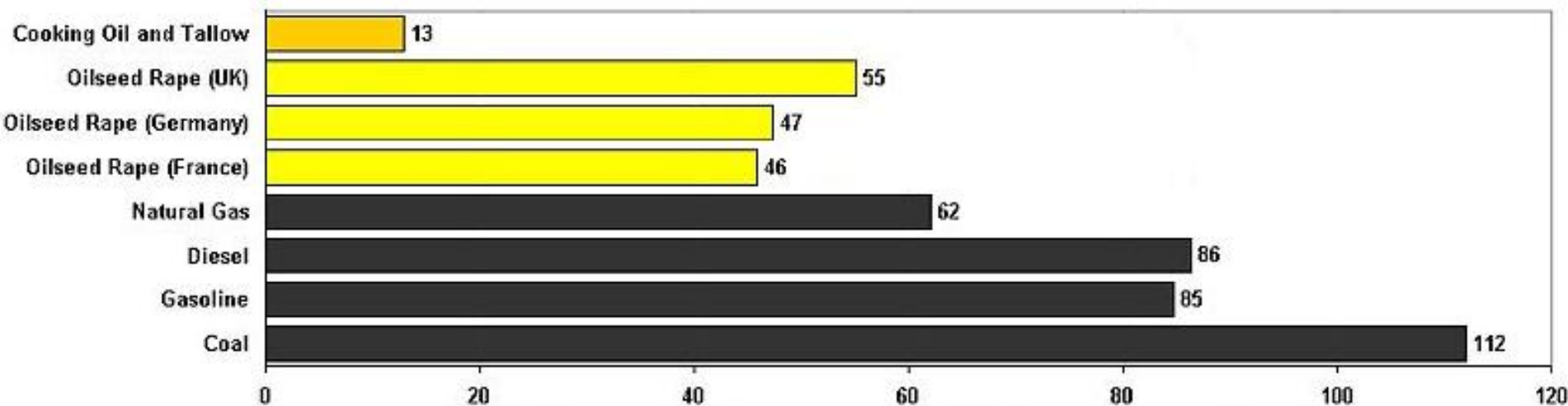


Powered by sunlight, recycled biodiesel produces no net increase in CO<sub>2</sub>



# Recycled Biodiesel is the environmental fuel of choice

- Made from used cooking oil, an abundant waste product from catering trade
- Does not cause deforestation, CO2 production, land use change, mass monocultures – these are caused by virgin biodiesel plantations
- Does not suffer from any of the problems highlighted in the Gallagher review (which led to a slowing of biodiesel use policy in the UK & Europe)
- Is the **lowest carbon** form of biodiesel – average 84% reduction compared to DERV



gram of Carbon Dioxide produced per Megajoule of energy (UK government figures)

data taken from [www.dft.gov.uk/pgr/roads/environment/rtfo/govrecifa.pdf](http://www.dft.gov.uk/pgr/roads/environment/rtfo/govrecifa.pdf)

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# Who are Uptown Oil?

- Established business of 20+ years providing a range of goods and services
- Diversified into biodiesel production in 2007 to leverage long-standing business relationships in the pub and restaurant sectors
- '*Commercial Environmentalists*' – we understand that environmental benefit can and should be promoted using commercial drivers such as profit and service
- The Local, Global Solution – We focus on the local environment.
- Instigated the ***Cleaner City Air Campaign*** in late 2007 to highlight chronic air pollution in the capital – the most polluted air of any UK city <sup>9</sup>
- Uptown exclusively recycles waste oil after it has been used for cooking, from over 1000 catering venues – no DERV, no Virgin Biodiesel

The logo for Uptown Oil is displayed in a large, bold, grey font. It is overlaid on a background image of a field of yellow flowers, likely rapeseed, under a clear blue sky. The text 'Uptown Oil' is split across two lines, with 'Uptown' on the top line and 'Oil' on the bottom line.

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# Recycled Biodiesel – Quality Fuel tested to European stds

**EN 14214** is the European standard for virgin biodiesel.

Closest standard for testing recycled biodiesel

Some parts N/A - e.g. sulphur content

Uptown benchmarks against applicable parameters

- High quality fuel
- Designed for all diesel engines
- Uptown biodiesel is routinely tested by accredited ISO9001 external laboratory service
- Outstanding quality fuel from waste cooking oil
- Uptown biodiesel is used as a recycled biodiesel quality benchmark standard



## BIODIESEL TESTING

Date of Receipt: 21.10.08	Date of Report: 24.10.08	COC No: 001764
Customer: UPTOWN OIL		
Job No:	PO No:	
Sample /Batch Number:-	150908	
Sample Date:-		
Location:-	LONDON	

## CERTIFICATE OF CONFORMITY TO EN14214 STANDARD

Requirements for Biodiesel	Results	Test Methods	EN 14214 Limits	Units
Ester Content	98	EN 14103	min 96.5%	m/m
Methanol Content	0.10	EN 14110	max 0.2%	

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# State-of-the-art Production Facilities



**The GreenFuels FuelMatic™** system provides semi - automated and highly controllable biodiesel processing. The system is ATEX approved and operates a closed system to prevent methanol vapour release.

The patented glycerol separator removes +99% glycerol and twin Rohm & Haas BD10 ion exchange columns polish the final product.

The biodiesel is filtered to 1µm to remove any microscopic particles.

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# Biodiesel Sales

- We sell recycled biodiesel in 1000 litre intermediate bulk containers (IBCs) for commercial operations
- Over 1000 taxis per month, also trucks, generators, space heaters, domestic boilers
- Biodiesel price is updated daily on our website and includes HMRC duty and VAT
- Boosting agents are available:
  - low temperature treatment (anti-gelling) for 0C or below
  - octane booster (power enhancer)
  - antioxidant (for prolonged storage + 1month)

The majority of additives are petroleum derived, we do not add them as standard

Operate 'oil for biodiesel' processing deals to encourage participation



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# Some Existing Commercial applications

- Uptown provides fuel to 1000 taxis a month (circa 50 a day) as well as courier firms, fleet operators and very soon, local borough councils.
- Uptown provides biodiesel to a timber yard that uses diesel space heaters to dry wood in winter. Less smoke and fumes means the wood does not absorb diesel emissions and the staff do not breath lots of DPMs
- Structural Soils – landscaping in tower bridge couldn't get red diesel in London – ran out of fuel, bought and used biodiesel for the remainder of their project – very happy
- Biodiesel can be used in any application where fossil diesel is used without engine conversion or alteration

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# Summary – where is the carbon saving?

## Recycle UCO

- Recycling UCO is one of the simple ways to lower your sites carbon footprint
- Easy to communicate and calculate carbon reduction
- Recycles a worthless (problem) waste into a useful fuel
- Readily managed through Master Contractor enforcement
- Is a statutory EA regulation = compliance (and C credits proven through WTN's
- Costs nothing to implement – generates positive CSR communications

= Carbon Reduction

## Recycled Biodiesel

- Improves workers environment
- Lowers fuel costs
- Directly replaces fossil diesel with low carbon fuel
- Lowers all exhaust emissions

= Carbon Reduction

***Recycling UCO and using Biodiesel = at least double Carbon savings !***

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**Get in touch – let us help you to lower your carbon footprint**



***Jason, Nigel or Stuart on 0207 928 6300***

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**[www.uptownoil.co.uk](http://www.uptownoil.co.uk)**



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# References

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- 9 - Every Breath You Take – London Assembly report into London Air Quality – May 2009



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