Ch-ch-**changes**

Environmental toxins have given us lesbian seagulls and transgender crabs, but pollutants may also be causing gender ambiguity in humans, says **Eric Francis**

For all 17 years I've been writing about PCBs and dioxins, I've been reading about the subtle and not-so-subtle sexual effects of these chemicals and many others related to them. We all have. Whereas once science worried about skin pustules and cancer, today the main concerns about pollution are its effects on sex hormones, and the way they blur the distinctions between the genders. During this same time we've been watching the transgender movement develop around the world – that is, people whose gender identity is consciously shifting, and many who are opting for gender reassignment surgery. Could there be a connection between the chemical and sexual environments?

Since the advent of the Kinsey scale, we have become more accepting of how gender and sexuality exist on a continuum, rather than as an either/or function. Studies on how environmental factors are influencing human gender identity are extremely rare. The topic seems shrouded in the general taboo on sexuality, and the more sensitive issues that surround homosexuality and transgender. Gay and transgender movements, for their part, seem unwilling to ascribe an environmental cause because of the presumption it suggests: that if the pollution is cleaned up, maybe they will go away.

On one level it seems impossible that there can be no connection between environmental factors and sexual fluctuations in humans. The articles on sexual effects of toxins come at us so fast, they go by in a blur. If only we had clipped or bookmarked them all.

Let's see: there were the infamous lesbian seagulls. There were the adult crabs that switched genders. There were the male babies born to Asian PCB exposure victims whose penises were smaller. Sperm counts have declined by 40 per cent since our grandfathers' generation. There was that study about the distance from the scrotum to the anus shrinking in boys, meaning that the male genital configuration is gradually becoming more like the female one.

Exposed girls and women are susceptible to hormonal diseases such as endometriosis. Daughters of Agent Orange exposure victims have a higher chance of developing childhood vaginal cancer. The female reproductive system is particularly sensitive to illnesses from exposure, including birth defects and infertility.

Eric Francis is the editor of planetwaves.net and has covered organochlorines and human sexuality issues since 1991

In 1991, a group of scientists met in Racine, Wisconsin, to discuss the effects of living in what many describe as a sea of artificial oestrogens, and issued something called the Wingspread Statement: 'The concentrations of a number of synthetic hormone agonists and antagonists measured in the US human population today are well within the range and dosages at which effects are seen in wildlife populations,' the scientists warned.

'Unless the environmental load of synthetic hormone disruptors is abated and controlled, large-scale dysfunction at the population level is possible' – which would seem to imply that social sexual choices and behaviour could be affected by exposure.

'Many wildlife populations are already affected by these compounds,' the scientists continued. 'The impacts include thyroid dysfunction in birds and fish; decreased fertility in birds, fish, shellfish and mammals; decreased hatching success in birds, fish and turtles; gross birth deformities in birds, fish and turtles; [...] demasculinization and feminization in male fish, birds and mammals; defeminization and masculinization of female fish and birds; and compromised immune systems in birds and mammals.'

Five years later, Theo Colborn, Dianne Dumanoski and John Peterson Myers came out with the book *Our Stolen Future*, establishing that hormone effects were not only well-documented, but also subtler and more widespread than anyone had anticipated. A major federal study on the toxicity of dioxin in the mid-1990s concluded the same thing: hormone effects are what is the most devastating to humans and wildlife.

"We've gone a bit past David Bowie's idea of being 'not sure if you're a boy or a girl'

In these same years, what used to be the lesbian and gay movement grew into the lesbian, gay, bisexual, transgender and queer movement (LGBTQ), which now seems to embrace everything but heterosexuality and self-sexuality.

We've gone a bit past David Bowie's idea of being 'not sure if you're a boy or a girl'; by one estimate, there are as many as 40,000 post-operative women currently living in the United States. Because health insurance pays for these surgeries in some places, sex changes are considered by some to be normative sexual behaviour. On web meeting spots like craigslist.org, phrases such as FTM (female-to-male transsexual) or MTF (male-to-female), pre-op and post-op are now common parlance.

Safer surgery, easier availability of the procedures and changing psychiatric definitions have helped raise the visibility of transsexuals. Hormone treatment is more easily available for those who wish to take on secondary characteristics of the other sex. Greater social acceptability has also made it easier – 20 years ago you might have been put on a psych ward for being a man who feels and acts like a woman. Today, you can get a date. But is there a reason this is happening now?

'If you see the gender configuration changing in fish and alligators in swamps, and you think that people have been exposed to the same detergents and compounds for years, we seem to have an issue,' said Monona Rossol, a New York-based industrial hygienist. 'The gay movement may be a chemically induced movement.'

Hormones contain the information not only about how our primary and secondary sex characteristics are supposed to look, but also about how we feel being male or female. We all contain attributes of both genders, nevertheless many argue that gender, gender role and sexual orientation are generally polarised more vividly by cultural mandates than by how we feel inside.

This is the viewpoint taken by Lynn Conway, who is one of the world's leading transgender activists, as well as one of the world's most prominent computer

Continued on p88

Continued from p87

engineers. She transitioned from male to female in the late-1960s.

'Trans-expression is not increasing,' she wrote in response to an email inquiry. 'What's happening in the West is that we are now revising the social contract that has prevented such expression in the past. This is happening under the pressure of a trans-revolution in which such folks are demanding their rights and aren't going to go away till they get them.'

She adds: 'The numbers here are simply a visible emergence of what's always been there, but has been brutally suppressed and kept invisible in the past. You can see this by looking at the numbers of trans people among Native Americans and, for example, the *hijra* in India. In such societies, transgender people way outnumber (on a percentage basis) the numbers of transitioners here. They simply worked out their social contracts long ago.

'It is possible that environmental factors may cause various conditions,' she concedes, 'however, there is no evidence that the emerging numbers here are any higher in percentage [terms] than have always existed in India and among Native Americans (approximately 1 to 2 per cent of people). Thus any environmental causes are likely to be small or modest compared to the natural variation in gendering seen in humans all around the world.'

However, says Carol van Strum, a pesticide expert and author of *A Bitter Fog,* the groups Conway is talking about 'are poverty-stricken to say the least, and are most likely to have very poor diets, heavily weighted toward cheap and highly contaminated foods, which, combined with malnutrition, are almost a guarantee of toxic effects. Add to this a possible cultural encouragement of transgenderism and there is simply no way to compare those groups with Americans or Australians or Chinese or whatever.'

'Maybe there are more gay and transgender people because there are seven billion people on the planet,' says Dana Beyer, a male-to-female transgender medical doctor and surgeon, 'and maybe there are more because of more endocrine disruptors. Very few people are looking at the issue.'

In 2005, with colleagues Dr Scott Kerlin and Dr Milton Diamond, Beyer presented a paper to the International Behavioral Development Symposium delineating the impact that the anti-miscarriage drug DES has had in causing intersex and transgender variations in humans.

'Hormones are signal transducers that impact multiple systems,' says Beyer. 'One day we will know what biochemical pathways are involved in becoming a lesbian. At the moment we don't know for sure, but we're close.

'Endocrine disruptors as a general class do cause variations in gender identity and sexual orientation through exposure *in utero*,' she explains, but adds: 'To me it's not the answer: it's part of the picture. We existed long before any of these endocrine disruptors existed.'

This may be true, but that does not deny a trend toward increasing gender-bending on all levels. If a whole population is increasingly affected to the point of increasing transgenderism in many people, then the ultimate result is a severely weakened species, reproductively speaking.

If, within a population, there are such visible and obvious effects as transgenderism, what are the concomitant less visible, less obvious and perhaps more serious insidious effects? For example, behavioural changes due to hormonal imbalance that make a population generally more violent, or brain chemistry alterations that lower the intelligence, judgement capability and adaptability of a population?

The visible effects such as transgenderism are ominous not in and of themselves, but because they signal far more serious effects that are going undetected.